

A MODEL FOR NURSE FACULTY RESEARCH PRODUCTIVITY

By

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by

Rose Theresa Kearney

To James and Helen Kearney,
with eternal gratitude, love, and respect.

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Abstract of Dissertation Presented to the Graduate School
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A MODEL FOR NURSE FACULTY RESEARCH PRODUCTIVITY

By

Rose Theresa Kearney

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Chairman: Linda E. Moody
Major Department: Nursing

Generation, dissemination, and utilization of research is central to advancing the knowledge base for the discipline of nursing. The purposes of this exploratory study were to discover how a sample of nationally known nurse researchers produce and reproduce knowledge for the discipline, identify individual and environmental variables related to successful research outcomes, and generate a theoretical model for research productivity.

An organizational systems model and a naturalistic inquiry paradigm guided the research design and the development of the theoretical model for faculty research productivity. Multiple data collection methods and sources were used. The primary source of data was through on-site, field interviews with established nurse researchers at seven universities that have been identified as leading academic institutions in the United States with graduate nursing programs. Pre-interview data were collected by questionnaires to obtain a profile of the nurse researchers and academic institutions. The field interviews were

conducted with a purposive sample of 21 nationally known nurse researchers who met the definitional criteria for established nurse researcher.

Interviews with established nurse researchers were taped, transcribed, and submitted to ethnographic analysis for domains and themes. Descriptive statistics were used to analyze biographical and institutional data.

From the interviews, the following significant individual variables were identified for the model of research productivity: character traits (interest, commitment and motivation, perseverance, creativity, independence, ethics); knowledge (knowledge base, opportunities for learning, awareness of when consultation and collaboration was appropriate); and skills (mental abilities, interpersonal skills, organizational skills, articulation skills). The most significant environmental variables of the model were as follows: academic and disciplinary expectations for scholarly productivity; administrative support for nurse faculty's development and involvement in programs of research through workload allocations, provision of resources for research, and faculty development; tangible resources to structure and foster environments that capitalize on resources available in academic nursing programs; and collegial support.

Recommendations from this study addressed further application and testing of the model of research productivity within academic nursing programs and extension of the research to include clinical settings of nurse researchers.

CHAPTER I STATEMENT OF THE PROBLEM

Introduction

Research and scholarship are vital to the sciences and the professions in accretion of knowledge. Bloch (1985) has stated that "the product of research is science or knowledge" (p. 127). Nursing has become increasingly concerned with scholarship and the extension of its knowledge base through research and theory development since the 1970s. Nurses are being prepared in increasing numbers at the graduate level and academic nursing programs are moving more in concert with other disciplines in academia for the scholarly expectations of faculty and students. Scientific inquiry is essential for providing a knowledge base for nursing practice. As proposed by the American Nurses Association Cabinet on Nursing Research (1985), "the future of nursing practice and, ultimately, health care in this country depend on nursing research designed to constantly generate an up-to-date organized body of nursing knowledge" (p. 1). Further, significant findings from nursing research must be disseminated for utilization and progress. Generation, dissemination, and utilization of knowledge are assumed to be affected by certain antecedents, intervening factors, and outcomes of the research process and the individual researchers. Identification of variables that influence research activities will

help to promote scholarly behaviors and stimulate further development of nursing knowledge. As Batey (1981) has indicated, "amassing all of the potential indicators of research productivity can be considered as a goal to be achieved by any field of study concerned with advancing its knowledge base either for the sake of that knowledge or for the use to which that knowledge may be placed" (p. 54).

Development of environments that support nursing inquiry has been stressed as a goal by the American Nurses' Association Cabinet on Nursing Research (1985). Brimmer et al. (1983) have stated that "salient features of educational programs and work settings must be identified and their relationship to scholarly productivity explored" (p. 165). Fawcett (1984) has identified the elimination of obstacles to research as a future hallmark of success in nursing research. The scholarly influence of leading researchers and the socialization of neophytes are critical factors to eliminate such obstacles (Fawcett, 1984). According to the American Association of Colleges of Nursing (Copp, 1981), even in a decade marked by competing needs and scarce resources, nursing research must be viewed and promoted as a priority (p. 2).

Established nurse researchers have those characteristics that have led to successful research endeavors. Identifying individual characteristics considered advantageous by established nurse researchers addresses the need for role models expressed by Brimmer et al. (1983). In a study of the environmental conditions for productive scientists in research and development departments, Pelz and Andrews

(1976) reported that "effective" scientists, although similarly motivated, differed from their less effective colleagues in the styles and strategies with which they approached their work (p. 7). The testimony of established nurse researchers may reveal their individual styles, strategies, and environments which, ultimately, affects the quality and type of nursing care to health care consumers.

Research Problem

The primary purpose of this research has been to determine individual and environmental characteristics of leading nurse researchers that are related to the generation, dissemination, and utilization of successful research. For the purposes of this study, nurse researchers in academic nursing settings are considered established nurse researchers following nomination by their respective Dean based on their contributions to the discipline of nursing. The primary research question for this exploratory investigation was as follows:

What are the individual and environmental characteristics of established nurse researchers that are identified as important to scholarly productivity that demonstrate an influence on the generation, dissemination, and utilization of successful research?

Research Questions

Specific questions for this exploratory study were as follows:

- (1) What precursors (antecedents) and individual characteristics do established nurse researchers identify as contributing to and influencing successful research outcomes and other scholarly endeavors?

- (2) What environmental variables do established nurse researchers identify as being essential to the support and success of their research and the research process?
- (3) How do established nurse researchers engage in linkage or network activities (intramurally and extramurally) to influence the dissemination and utilization of research findings?

Definition of Terms

The following terms have been defined for the purposes of this study.

Established nurse researchers are leading researchers in academic nursing settings who have made recognizable contributions to the scholarly discipline of nursing. Criteria for the selection of established nurse researchers include all of the following: has been awarded an earned doctorate, has an existing program of funded research, has provided leadership to a research team, has recently published research findings in scholarly nursing journals, has had past findings utilized in nursing settings or used in research replications, and is employed full-time at an identified leading academic institution. In addition, the researcher demonstrates several of the following characteristics: has presented research papers at the national or international level, has received a regional/national research award, and has current membership in the ANA Council of Nurse Researchers or other professional research societies.

Career age is the number of years of full-time academic appointments which have been held by the established nurse researcher in a college or university setting.

Domains are symbolic categories that share at least one feature of meaning in ethnographic data (Spradley, 1979, p. 100). For the purposes of this study, domains were developed as symbolic categories from the verbal and written comments provided by at least 40 percent of the respondents.

Environments are contextual settings that include the school or college of nursing, the university, the nursing discipline, and society.

Individual characteristics are those individual traits demonstrated, exhibited, or identified by an established nurse researcher and include personal, professional, positional, productivity, network, and research orientation variables.

Leading academic institutions are top-ranked institutions identifiable in two or more of the rating schemes (Blau & Margulies, 1974-75; Chamings, 1984; Hayter, 1984; Hayter & Rice, 1979; Margulies & Blau, 1973) that have appeared in the literature. Institutions selected as sites for investigation of established nurse researchers shall be considered as representative of leading academic institutions rather than associated with any definitive ranking of reputation or scholarly productivity.

Research includes all forms of research activities including basic, applied and practice research, whether qualitative or quantitative in nature, relevant to practice, professional, administrative, or educational issues in nursing.

Scholarly productivity is defined as contributions to nursing including research activities, publications, presentations, recognition through awards, positions on editorial boards, and consultations.

Successful research includes activities/outcomes completed that have received positive acceptance by reviewers and colleagues, perhaps been cited in work by others, generated positive feedback from readers, and been recognized as making a major contribution to the field.

Themes are developed in ethnographic analysis as categories derived from domains to exhibit broad principles from qualitative responses on a selected topic. Spradley (1979) has referred to themes as cognitive principles which are common assumptions about the nature of the experience of respondents (p. 186).

Assumptions and Delimitations

Assumptions

For the purposes of this study, the following assumptions were specified:

- (1) The development of scientific knowledge and scholarly productivity by nurses is affected by multiple individual and environmental factors.
- (2) Research and scholarly activity occur in certain established institutions that can be identified through factors related to institutional reputation.
- (3) Generation and dissemination of knowledge occur within the tradition of the tripartite mission of research, teaching, and service of the modern American university.

- (4) A large proportion of established nurse researchers are employed at leading academic institutions.
- (5) Established nurse researchers are assumed to share similar characteristics vital to successful research outcomes.
- (6) Established nurse researchers are attracted to leading academic institutions and, in turn, attract other resources and researchers to these environments.
- (7) Characteristics of established nurse researchers and their environments synergistically affect the development of scientific nursing knowledge.

Delimitations

The study is delimited to established nurse researchers at leading academic institutions which restricts the full range of research and scholarly behaviors exhibited by the general population of nurse scholars. Outstanding researchers may not be limited to the institutions selected for study but have been assumed to be present in greater numbers in these environments.

Theoretical Framework

Inquiry Paradigm

The research was based on a naturalistic inquiry paradigm. Lincoln (1985) has described the naturalistic paradigm with the focus on environmental context and environmental shapers to "exhibit patterns and webs of influence that in turn select and are selected by participants on the scene in mutually reinforcing ways" (p. 141). Guba (1985) has characterized this paradigm along seven dimensions,

complexity, heterarchy, holography, interdeterminacy, mutual causality, morphogenesis, and perspective, with the following axioms:

- (1) Multiple constructed realities should be studied holistically in order to achieve a level of understanding;
- (2) Interaction and influences occur between inquirer and respondent;
- (3) The aim of inquiry is to develop a model of knowledge using working hypotheses with individual cases;
- (4) Multiple interacting factors and processes provide the nature of explanation; and
- (5) Inquiry is value-bound, influenced by the inquirer, inquiry and substantive paradigms, society, and the interaction of these factors (pp. 85-86).

Axioms of naturalistic inquiry are relevant to the investigation with the assumption that the development of scientific knowledge and scholarly productivity by nurses is affected by multiple individual and environmental or organizational factors. Pranulis (1984) investigated the functional significance of selected aspects of the research environments at university schools of nursing. Further, Pranulis (1984) assumed there was "an interaction between the person and the environment that is influential in molding the person's identity and subsequent behavior" (p. 11). In an earlier study, Batey (1978) investigated research development in university schools of nursing through description of organizational structure and process.

Substantive Paradigm

The substantive paradigm supports the dimensions and axioms of naturalistic inquiry and is an adaptation of two models (Havelock, 1971; Kast & Rosenzweig, 1979) based on the production of scientific knowledge and organizational theory. Each of these models will be described prior to the presentation of the theoretical framework adapted for this study.

Knowledge flow structure

Havelock (1971) has used a system and process model to depict an organization with subunits containing the major concepts of role and linkage. The organizational subunit contains a knowledge source and through linkages between roles and linkages among subunits and organizations the processes of dissemination and utilization flow to the knowledge user. At each linkage point in the knowledge flow system, a knowledge flow transfer process takes place for both a micro-perspective (within the individual) and a macro-perspective (among individuals and organizations) (Havelock, 1971, p. 1-13). Utilization is considered as a process within the individual using the concepts of personality factors, cognitive and attitudinal variables, and the various specific characteristics of people which have been found to be related to the receptivity of new knowledge (Havelock, 1971, p. 1-12). Then as a building process, the two-person transfer situation occurs with two persons, each with their own separate identity and set of motives, resistances, values and understanding; differences between receiver and sender constitute potential barriers

to dissemination and utilization of knowledge (Havelock, 1971, p. 1-14). The perspective is similarly broadened to an interorganizational perspective. Communication is a major process thread in this model.

The "knowledge flow structure" is described as the sequence of organizational roles and mechanisms through which knowledge is processed in an organization from input to output (Havelock, 1971, p. 2-28). To look at nursing research, one must consider the macro-perspective. Havelock (1971) has identified four principal points of the macro system:

First, the university is the primary source, storage point, and cultural carrier of expert knowledge in all fields, basic and applied. However, the university does not take any active responsibility for diffusing this knowledge or ensuring that it gets used. Second, this responsibility seems to reside in the three sectors of the practice world, the professions, the product organizations, and the service organizations. Third, the consumer's power to influence his would-be "helpers" in the practice-world and the research world is very limited; this consumer powerlessness is to the detriment of the system as a whole. However, there are some signs that the picture is changing for the better. Finally, there are some integrating forces, some organizations and individuals who are working for a greater coordination of the total process from the university laboratory to the classroom and the hospital bed. (pp. 3-2 - 3-3)

This description can be applied to scholarly nursing from the research orientation at the university level, to transmission of knowledge to students in the classroom and clinical practice arena, to dissemination efforts with practitioners, and the integrating forces of our leading nursing professional and scholarly organizations, professional meetings, and journal publications.

Organizational systems

Kast and Rosenzweig (1979) view organizations as open, sociotechnical systems composed of five subsystems: goals and values, technical, psychosocial, structural, and managerial. Inputs of energy, information, and materials are received from the environment, transformed, and returned to the environment. The organization is not simply a technical or social system but the structuring and integrating of humans around various activities (Kast & Rosenzweig, 1979, p. 108). Kast and Rosenzweig (1979) have described the internal organization of their model with five major subsystems as follows:

The organizational goals and values are one of the more important of these subsystems. The organization takes many of its values from the broader sociocultural environment. A basic premise is that the organization as a subsystem of the society must accomplish certain goals that are determined by the broader system. . . . The technical subsystem refers to the knowledge required for the performance of tasks, including the techniques used in the transformation of inputs into outputs. . . . Every organization has a psychosocial subsystem that is composed of individuals and groups in interaction. It consists of individual behavior and motivation, status and role relationships, group dynamics, and influence systems. It is also affected by sentiments, values, attitudes, expectations, and aspirations of the people in the organization. . . . Structure involves the ways in which the tasks of the organization are divided (differentiation) and coordinated (integration). . . . The managerial subsystem spans the entire organization by relating the organization to its environment, setting the goals, developing comprehensive, strategic, and operational plans designing the structure, and establishing control processes. (pp. 109-110)

This theoretical structure is particularly applicable to a university system with the goals of the generation and transmission of knowledge. An underlying assumption of the Kast and Rosenzweig (1979)

model is that there should be a congruence between the organization and its environment and among the various subsystems (p. 115). Use of the adaptive-organic organizational form is appropriate for research and scholarly productivity in a university setting with the following patterns of relationships:

1. The environment is relatively uncertain and turbulent
2. The goals are diverse and changing
3. The technology is complex and dynamic
4. There are many nonroutine activities in which creativity and innovation are important
5. Heuristic decision-making processes are utilized and coordination and control occur through reciprocal adjustments. The system is less hierarchical and more flexible. (Kast & Rosenzweig, 1979, p. 116)

Further, these relationships are congruent with a naturalistic inquiry paradigm.

Use of the five subsystems is also applicable to the generation of nursing knowledge in a university environment. Research, creativity, and scholarly productivity are esteemed values and goals in both nursing and higher education. Kast and Rosenzweig (1979) have stated that the "social role of the university is the creation and dissemination of knowledge. . . . and the university has the special function of creating new knowledge through research" (pp. 519-520).

This is further described with three predominant institutional goals:

1. The dissemination of knowledge to students. . . primarily done through the teaching function;
2. The creation and advancement of knowledge. . . accomplished through the research activities of the faculty and specialized staffs; and
3. Service to society. . . [which] establishes the norm that knowledge creation and dissemination should be useful. (Kast & Rosenzweig, 1979, p. 520)

Two major concepts of the psychosocial subsystem are roles and status. The concept of role "describes the behaviors the individual is expected to exhibit while occupying a given position in a societal or organizational system" (Kast & Rosenzweig, 1979, p. 261). Nurses as university faculty are expected to exhibit behaviors related to the roles of researcher, educator, and practitioner. These three roles relate to the generation, dissemination, and utilization of knowledge. To what measure these roles are congruent with the university mission for research, teaching, and service depend upon the mission and its application at the university, college, and departmental levels. In addition, as professionals, nurses are expected to engage in research activities appropriate to their educational preparation. A useful typology to maximize participation and individual role responsibilities was developed by the American Nurses' Association (1981) which relates educational preparation with expected research activities. Fawcett (1985) has indicated that this typology does not provide exclusive categories in that some individuals are competent at higher levels of research performance when compared with educational level. This typology suggests the elimination of inappropriate expectations yet stresses the involvement of all nurses in some form of research activity.

An important aspect of the model and the psychosocial subsystem is that Kast and Rosenzweig (1979) have denied the concept of role conflict for faculty and have supported the duality of teaching and research: "university professors have a dual role of teaching and

research, and they cannot adequately fulfill their responsibilities without giving attention to both . . . both activities are vital to the basic goals of the institution" (p. 530).

Status is the second major concept of the psychosocial subsystem. Status generally "refers to the ranking or stratification of people in a social system", yet in an organizational context, it refers to a specific hierarchical position (Kast & Rosenzweig, 1979, pp. 260-261). In a university, status is evident with specific positions and academic rank. Two further forms of status are relevant to the study design: functional status and occupation prestige (Kast & Rosenzweig, 1979). Functional status has been used to the focus on established nurse researchers with successful research and scholarly endeavors as particular career functions. Occupational prestige has also been used in the research design through the focus on established nurse researchers in leading schools of nursing. "Occupational prestige is important in the social system because it affects the power and influence of occupants of certain positions, as well as the amount of resources that society places at their disposal" (Kast & Rosenzweig, 1979, p. 266). Occupational prestige relates to the reward system of science and potential advantages that accrue through recognized contributions.

The technical subsystem has two basic components: physical resources and accumulated knowledge. The accumulated knowledge is the means to accomplish tasks (Kast & Rosenzweig, 1979, p. 195). "Teaching and scholarly research are the primarily technical tasks of the system"

(Kast & Rosenzweig, 1979, p. 521). Research and scholarly productivity are dynamic and increase the degree of complexity in the system while providing valuable outputs to the environment, in particular the discipline of nursing, and ultimately the consumers of health care.

The structural subsystem can be viewed through school and departmental structure and patterns of authority. The concept of a community of scholars is appropriate here in terms of decision-making and allocation of resources. Resources, rewards, and integration of activities are provided through the functioning of the managerial subsystem. "The managerial system spans the entire organization by directing the technology, organizing people and other resources, and relating the organization to its environment . . . human and physical resources are combined to achieve certain objectives" (Kast & Rosenzweig, 1979, p. 111).

Both of the systems models presented are extensions of earlier models. Influences from Talcott Parsons and Robert Merton are apparent. Havelock's (1971) application of the influence from the professions and the prominence of roles in social system theory are credited to Parsons. The concepts of values and linkages have been influenced by the work of Merton. More apparent is the influence from Parsons in the model by Kast and Rosenzweig. Managerial systems concepts and concepts relating the structure and processes of the social system are credited to the work of Parsons. Merton's influence is apparent in the development of the psychosocial subsystem. Some similarities are to be expected due to the application of open systems

in the different models. The model by Havelock adds a further dimension through the focus on dissemination and utilization of findings. And, the model by Kast and Rosenzweig has expanded sociological systems to sociotechnical.

Study framework

Further adaptations are necessary for use of the models of Havelock (1971) and Kast and Rosenzweig (1979) with the area of concern of individual and environmental characteristics of established nurse researchers. The total university will not be the major focus but will provide an environmental influence, as will the profession of nursing and its organizations, values, goals, and prominent nurse researchers. The framework represents an open, organizational system of knowledge development in interaction with four environments: (1) the immediate environment of a university college/school of nursing containing the five subsystems of goals and values, psychosocial, technical, structural, and managerial; (2) the general organizational environment of the university; (3) the nursing disciplinary environment; and (4) the broad social environment.

Inquiry for the study is organized by factors classified as personal, professional, positional, organizational, network, productivity, and research orientation. Preliminary classification of these variables was done following identification of pertinent variables related to scholarly productivity of college and university faculty appearing in the literature. For the most part, categorization of these factors was proposed based on main influence in the theoretical suprastructure. As an open system, other system structures

are expected to be affected by these variables as well, but to a lesser degree than the structure identified with the variable. Variables for investigation have further been classified into input (antecedent), throughput (intervening), and output (consequence) variables. Table 1 illustrates this general classification of variables.

Figure 1 represents a combination of the models by Havelock (1971) and Kast and Rosenzweig (1979) for an open systems organizational framework for knowledge development and transmission. A continuous and cyclic process of knowledge flow from generation at the university college/school of nursing level proceeds to dissemination and utilization at the various environmental levels. The process proceeds from antecedents (inputs) to consequences (outputs) as knowledge builds, is processed, and revised with additional information or inputs. At the center of the process is the university college/school of nursing. The subsystems of interest occur at this level with particular unit characteristics to be investigated. Again, this is an open, interrelated structure and overlap of variables is to be expected in line with the naturalistic concepts of multiple reality, relationships, and causality. Further specification of system variables is assumed to occur following naturalistic inquiry. The preliminary classification of system variables is presented in Table 2.

The university environment represents the next immediate environment to the college/school of nursing. Influences at this level occur from university administrative, policy, and operational influences which guide the college/school organization and operation.

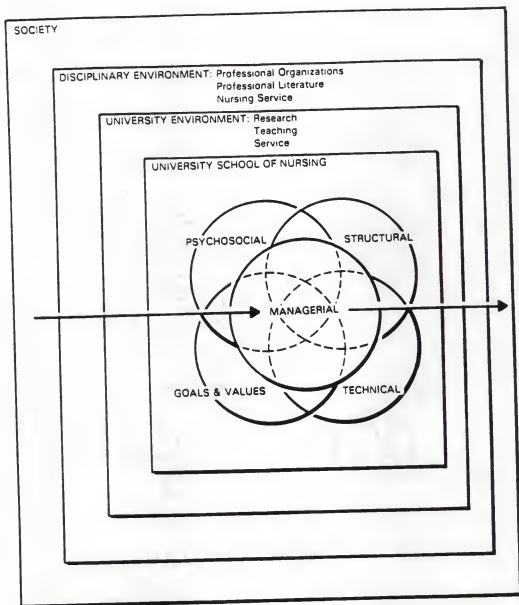


Figure 1. Organizational model of knowledge development at a university school/college of nursing.

Note. From Organization and Management (p. 109) by F. E. Kast and J. E. Rosenzweig, 1979, New York: McGraw-Hill. Copyright 1979 by McGraw-Hill. Adapted by permission.

Table 1General Classification of Variables by General System Activity

Input (Antecedents)	Throughput (Intervening variables)	Output (Consequences)
Personal		
Chronological age		
Marital status		
Number of dependents		
Race/ethnic origin		
Gender		
Family background		
Place of birth		
Professional		
Educational preparation	Work habits	
Postdoctoral work		
Clinical specialty		
Career influences		
Career age		
Positional		
Academic rank	Position/title	
Tenure status	Program assignment	
Years at current location	Primary responsibility	
Mobility	Job related activities	
	Student/faculty ratios	
Organizational		
Geographic location	Characteristics of environments	
	Research requirements	
Network		
Journal subscriptions	Communication with colleagues	
Mentee relationships	Mentor relationships	
	Professional societies	
Productivity		
Early publications	Publication habits	Scholarly activities:
	Perceptions of success	
Research Orientation		
	Importance and preferences	publications
	Research habits	grants/funding
	Influences on scholarship	awards
	Contributions to nursing	other projects
		consultations

Table 2

Preliminary Classification of System Variables

<u>System Structure</u>	<u>Variables</u>
Goals and Values	Positional: academic rank, tenure status Research Orientation: perceived importance, preferences for research, contributions to nursing Productivity: perceptions of research success
Psychosocial	Personal: chronological age, marital status, number of dependents, race/ethnic origin, gender, family background, place of birth Professional: educational preparation, career influences, clinical specialty, career age Positional: years at current location, mobility, position/title, program assignment, primary responsibility, job-related acts Productivity: early publications
Structural	Organizational: school organization, program characteristics Research Orientation: scholarship influences
Technical	Professional: postdoctoral work, work habits Positional: student/faculty ratios Research Orientation: research habits Productivity: publication habits
Managerial	Organizational: support for research, research requirements
University Environment	Organizational: geographic location, institution type and sponsorship, primary mission, productive environmental characteristics, support services and resources
Disciplinary Environment	Network: Communication with colleagues, mentor-mentee relationships, professional societies, journal subscriptions Productivity: type and rate of scholarly activities

This level is one of generation of knowledge through research and dissemination through teaching and service functions.

The next environmental division is the nursing disciplinary level which provides the professional orientation, specialization, and additional value structures of the university nursing faculty. Havelock (1971) has referred to this stratum as the practice world. The disciplinary environmental focus in this study will primarily be investigated through faculty interactions with professional organizations and societies, service organizations, and scholarly product organizations. Although this disciplinary environment is affected by generation at the interorganizational systems level, primary consideration will be given to dissemination and utilization of knowledge.

The broader social environment reflects societal needs and values through the needs and potential needs of consumers of health care. Utilization of knowledge and origination of problems and needs are the primary influences from this environmental level. Linkages among all system parts are assumed as necessary for effectiveness and continuity.

Generation of knowledge is to be investigated at the level of individual nurse faculty researchers. The flow of this knowledge from generation to dissemination will be the focus to explore individual and environmental factors that influence knowledge for the discipline of nursing.

Significance

As professionals, nurses are expected to engage in research activities; research ultimately contributing to the body of knowledge. The Cabinet on Nursing Research of the American Nurses' Association (1985) has identified goals and strategies for nursing research priorities which address the needs for an increased supply of nurse scientists, enhanced research productivity, development of environments to support inquiry, and generation, dissemination, and utilization of scientific knowledge to guide practice. In a two-year national study of nurses with doctoral degrees for the American Nurses' Association Cabinet on Nursing Research, Brimmer et al. (1983) indicated that there has been substantial growth in the number of nurses with doctoral degrees but a large number of these nurses were in the initial phase of socialization as scholars (Brimmer et al., 1983, p. 164). Brimmer et al. (1983) have therefore concluded

The context in which new doctoral graduates find themselves during this formative stage is of critical significance for those seeking to develop roles as productive researchers. Since few nurses are employed primarily for the conduct of research and, in the aggregate, an average of only 12% of work time is reportedly focused on research activities, this provides a limited number of role models and little or no time for exposure to ongoing research activities in many work settings. (p. 164)

Yet, research and other forms of scholarly productivity must be more than isolated events or products. Scholarly productivity must be toward some end; that end being contributing to the body of scientific knowledge and subject to dissemination and utilization. Development of programs of research, whether longitudinal, cross-sectional, or

combination programs (Felton & Yeaworth, 1985), is one means for such a contribution. Felton and Yeaworth (1985) have defined such a program:

a focused, long-term commitment to increasing research skills in a continuous manner, pursuing a truly significant problem further and further, applying procedures for conducting the inquiry, refining research methods, and modifying ways for making critical measurements of a variety of populations, conditions, or situations. (p. 187)

Such a program can be demonstrated by committed researchers, especially leading nurse researchers. The question may then be raised as to the characteristics of such researchers and their environments in order to strengthen the cadre of nurse researchers and promote those environments conducive to such inquiry.

Based on a review of the literature, an assumption of this study was that increased research and scholarly activity occur in certain established institutions that can be identified through factors related to institutional reputation. The university college/school of nursing has been selected as the organizational site for the study of established nurse researchers on the assumption that generation and dissemination of knowledge occur within the tradition of the tripartite mission of research, teaching, and service of the American university. Clark (1984) has advanced the organizational perspective and has stated, "knowledge is the common substance involved in activities of the system: research creates it, scholarship preserves, refines and modifies it, teaching and service disseminate it" (p. 107). Murphy (1985) has stated, "a university setting can provide an intellectual community of scholars, physical resources, and the freedom of inquiry

necessary for creative scientific work" (p. 104). Further in the area of research, Havelock (1971) has proposed that the university-based professional school is the "key-bridging institution between research and practice" (p. 3-20). Gortner (1983) has observed that "the modern university is the mainstay of important scientific activity in many fields" but nursing's progress as an academic discipline in the next decade is dependent on the university to house and nurture the fledgling science of nursing (p. 7).

Attention to the academic environment has implications for human and physical resource utilization as well as further development of the body of knowledge in nursing. Through greater knowledge of the individual and environmental characteristics of scholarly productivity, academic environments and individual faculty members can be developed for greater scholarly productivity. Academic nursing administrators will be provided with an increased understanding of how individual and environmental variables influence the research process and the success of nurse researchers, providing further implications for faculty evaluation and development. The influence of administrative functions and scholarly productivity is one consideration. In a study comparing the professional activities of nurse doctorates with other academic women, Lia-Hoagberg (1985) reported that nurse doctorates spend less time on research and scholarly writing, publish fewer journal articles, and present fewer papers at professional meetings (p. 158).

Another consideration for academic nursing administrators is the focus of research currently being conducted in relation to the funding

priorities for clinical research in the newly established Center for Nursing Research at the national level. Pranulis (1984) found few of the nurse educators included in her sample involved in research which could be classified as studies of clinical therapeutics (p. 190), whereas a study by Brown, Tanner, and Padrick (1983) indicated an increase in clinical research in the literature over the past three decades.

Intramural support and expectations for scholarly productivity of faculty are a further consideration for academic nursing administrators. Nieswiadomy (1984) surveyed nurse educators from a variety of program types concerning their involvement in research and found that nurse educators reported only minimal support provided for research activities in their institutions (p. 56). Baird et al. (1985) surveyed baccalaureate schools of nursing and found that scholarly activity was considered highly important in evaluation for promotion and tenure in over 50 percent of the schools with an increasing importance given to scholarly criteria for faculty evaluation yet with variable interpretations of importance given to individual activities. An increased demand for scholarly productivity by faculty exists as nurse educators are held to the same expectations as faculty in other disciplines in the university. Greater knowledge is needed for faculty recruitment, evaluation, and development related to scholarly productivity. In addition, the quality of the research and related scholarly activities must be such that it contributes to the body of knowledge rather than solely toward individual promotion and tenure

needs or valuable studies with limited dissemination. Further, the academic environment provides an arena for the transmission to students of skills and value systems associated with research for continuity and contribution to the body of nursing knowledge. The successful and innovative strategies of established nurse researchers provide a greater understanding of the individual and environmental factors that promote successful research outcomes and higher levels of scholarly productivity.

Through her research concerning productive research environments, Batey (1981) has concluded that there are university schools of nursing coming to be known as centers for research through opportunities offered for faculty investigators as well as the research reported by selected faculty, but there is no school of nursing which can be considered a productive research organization (p. 56). Yet, Batey (1981) has provided several criteria for successful and productive university nursing research environments based on the findings of her earlier research. Batey (1978) focused her research on variables related to the environmental context within 12 schools of nursing with significant extramural funding.

Pranulis (1984) further extended Batey's work through her retrospective correlational study to describe the functional significance of the environment on nurse faculty research productivity. Pranulis used a broadened perspective to include other forms of scholarly productivity in addition to research activities. In her investigation, female faculty members with doctorates at ten leading

schools responded to questionnaires on values orientation and environmental influences, while background information on the ten schools was obtained through telephone interviews with a resource person from each of the ten schools (Pranulis, 1984). "The nurse faculty member's identity as a nurse researcher was found to be the individual characteristic significantly associated with her research productivity" (Pranulis, 1984, p. 208). Pranulis (1984) presented findings to profile high versus low productive environments using four schools within her sampling of institutions based on mean productivity ratings of faculty, further supporting Batey's research. Further investigation is needed to explore how and why leading nurse researchers are successful and what environmental variables contribute to successful research outcomes.

Summary

This exploratory study employed a naturalistic inquiry paradigm and an organizational systems substantive paradigm to analyze variables influencing the generation, dissemination, and utilization of successful research by established nurse researchers at leading academic institutions. This research has been aimed at yielding findings concerning (1) individual and contextual factors associated with scholarly productivity of leading nurse researchers; (2) optimal academic environments for research, thus extending the work of Batey (1978) and Pranulis (1984); and (3) strategies used by successful nurse researchers for effective dissemination and use of research findings, ultimately leading to knowledge accretion and improved nursing care.

An overview of the research has been presented in this chapter, including the research problem and questions, definition of terms, assumptions and delimitations, the theoretical framework, and the significance of the study. Chapter II provides a review of related literature. Research methodology is included in Chapter III with discussions of the study development, research design, environments and subjects, instruments, and data collection and analysis procedures. Research findings are presented in Chapter IV and discussed in Chapter V. Conclusions and recommendations are presented in Chapter VI.

CHAPTER II REVIEW OF THE LITERATURE

This chapter contains a review of literature relevant to scholarly productivity. Scholarly productivity is an issue of concern to many disciplines in academia and the professions, with some areas studied at greater frequency. Batey (1981) has stated, "research productivity is the form through which the conduct and the achievement of the science of a discipline becomes evident" (p. 54). Publication measures are often used to quantify research and other forms of scholarly activity. First, the literature will be reviewed broadly, by selected factors investigated, and by dependent measures used for assessment. Secondly, recommendations from literature specific to scholarship in academic nursing will be presented. Recommendations from previous studies in the literature will be included throughout the discussion.

Scholarly Productivity

Institutional Productivity

One avenue for investigation of scholarly productivity has focused on institutional productivity with publication productivity of the total faculty in a particular department or discipline as the predominant measure. Methodologies have included reviews of specified sets of journals for faculty publications in education (Eash, 1983; West, 1978), speech communications (McCallum, 1984), psychology (Cox & Catt, 1977), and nursing (Hayter & Rice, 1979; Hayter, 1984).

Additional criteria with publication counts have been used in several studies. Eash (1983), who assumed "faculty productivity emphasizes the strength of institutional research" (p. 5), based productivity on papers presented, extramural funding received, and articles in specified, leading journals over a seven year period of time. In several studies proportional credit was awarded in the case of multiple authorship and/or institutional affiliation (Cox & Catt, 1977; Eash, 1983; McCallum, 1984; West, 1978) while others considered credit to the institution only in the case of primary authorship (Hayter, 1984; Hayter & Rice, 1979). Silverman (1984) investigated publishing patterns in higher education journals but also considered institutional affiliation. In an attempt to qualify productivity, Glenn and Villemez (1970) developed a scale for faculty publications in sociology departments which weighted books (research/theory, textbook, edited) and specific disciplinary journals. Outcomes of these studies aimed at providing a rating for or awareness of productive sites in academia.

Individual Productivity

Batey (1985) has observed that an organization acquires a reputation for scholarship through the explicit achievements of its individual scientists (p. 489). Numerous authors have attempted to correlate factors with individual scholarly productivity. Creswell (1985) has proposed a profile of productive researchers which has emerged from this literature in the past 40 years.

A productive researcher is: (1) employed in a major university that rewards research and assigns ample time for faculty to conduct research; (2) holds senior professorial rank, though performance may peak 10 years after the doctorate and again later toward the end of the career; (3) spends at least one-third of time on research activities; (4) began publishing early in career and received positive feedback from peers for research efforts . . .; and (5) maintains regular close contact . . . with colleagues on and off campus who conduct research on a similar topic. (Creswell, 1985, p. vi)

Finkelstein (1984) has reported similar characteristics for productive published writers: (1) holds a doctorate; (2) is oriented toward research; (3) demonstrates early publications and is recognized for scholarship; (4) maintains close contacts with colleagues and keeps abreast of the literature; and (5) demonstrates a greater time commitment to research than teaching (p. 98).

Research on publication productivity has been conducted in a number of academic disciplines including the natural and biological sciences, mathematics, liberal arts and humanities, behavioral and social sciences, engineering, business, medicine, and law. Other research has focused on scientists in general, where faculty as a group have been found to be the most productive within the norms of academia. In nursing, studies of individual scholarly productivity have included those by Holt (1973), Lia-Hoagberg (1985), Marella (1974), Nieswiadomy (1984), Ostmo (1982, 1986), Phillips (1973), and Pranulis (1984). In their classic study of research activities by faculty, Fulton and Trow (1974) included nursing faculty under the category, "new and semi-professional fields," indicating more of a practice focus of such disciplines, thus differing from others in academia. Nursing has

become increasingly concerned with scholarly productivity, but with variable definitions and applications of scholarly products (Baird et al., 1985).

Variables studied as correlates of individual scholarly productivity have been numerous. Representative studies and findings are included in the following section describing common variables investigated.

Academic rank

Academic rank has frequently been found to be a significant factor related to scholarly productivity (Finkelstein; 1984; Hall, 1975; Walton, 1982). Findings in the literature are inconclusive as to whether rank serves as an antecedent, a consequence, or an intervening variable despite this significant association. Fulton and Trow (1974) found an increasing tendency for research activity, the higher the academic rank with "the most crucial difference between the temporary rank of instructor and the career rank of assistant professor" (p. 50). These researchers hypothesized that instructors simply have no time for the research they wish to do when rank was considered with respect to research orientation (Fulton & Trow, 1974, p. 51). Behymer and Blackburn (1975) found that academic rank was the third most significant predictor of rate of article production but when a more powerful statistical test was used, Blackburn et al. (1978) indicated that rank was the most significant predictor of productivity. Other studies have focused on the three professorial ranks, with significant positive correlations reported with scholarly productivity. Gunne and

Stout (1980) found that assistant professors studied were found to be generally half as productive as the associate professors and professors combined or the department chairpersons (p. 143). In his investigation of productivity of undergraduate faculty, Hall (1975) stated that rank was a significant predictor but "more a title than a cause or consequence of publication productivity" (p. 60). Still, rank has been found to be significantly related to both cumulative publication productivity as well as rate of productivity which lends support to factors other than longevity in the academic setting (Finkelstein, 1984).

In nursing, academic rank has been further supported as a predictor of scholarly productivity. With respect to research, Nieswiadomy (1984) found a significant relationship between rank and four measures of productivity: degree studies, non-degree studies, published studies, and present studies. Pranulis (1984) reported the highest level of scholarly productivity for full professors in her study of nurse doctorates, while Lane et al. (1981) found that the greatest participation in research activities was by associate and full professors of nursing. Further support for the significance of academic rank as a correlate of publication productivity in academic nursing has been reported by Ostmo (1982).

Administrative activities

Faculty involvement in administrative activities in studies of scholarly productivity have been used in a more descriptive than inferential manner. Roe (1965) reported that the majority of the

eminent scientists she had studied more than a decade earlier had since undertaken some form of administrative responsibility, from department chairperson, to head of the institutional unit, to other types of positions. When re-interviewed these eminent scholars agreed that any administrative position takes time away from research, yet Roe (1965) determined that they continued to contribute significantly to the literature through publication. Fulton and Trow (1974) reported the principle, "the more, the more" in relation to productive researchers after discovering that the ones they identified also filled a good deal more administrative roles along with research and teaching than their less productive counterparts (p. 68). Gunne and Stout (1980), who studied publishing patterns of department chairpersons and faculty at three professorial ranks, reported that mean productivity for chairpersons was consistently higher for four measures of scholarly productivity than assistant professors despite the formers' administrative responsibilities.

Further investigation of this area is needed in academic nursing with consideration of possible differences specific to the discipline. Pranulis (1984) reported the following faculty perceptions on the influence of administrative responsibilities on research activities: 46.6 percent felt they were an inhibitor, 13.6 percent felt they were a facilitator, and 38.8 percent of faculty in the sample felt there was no effect (p. 118). When nurses with doctorates were compared with other academic women in research universities, Lia-Hoagberg (1985) reported that nurses with doctorates demonstrated greater

administrative functions in their positions while other academic women exhibited greater levels of scholarly productivity. Some of the differences between these findings may relate to either non-representative samples or the environments of the nurse doctorates and the other academic women studied. Fulton and Trow (1974) observed that the separation between research and other roles, like teaching and administration, was more apparent in institutions other than elite institutions where rôles were combined.

Age

Investigators have sought to relate scholarly productivity to chronological age, but the significance of the scholar's age alone has been negligible. Blackburn et al. (1978) eliminated age as a predictor of scholarly productivity when stronger statistical tests demonstrated that age was highly correlated with academic rank, a stronger predictor of productivity (p. 135). Fulton and Trow (1974) have supported this association between age and rank while other researchers report age as a nonsignificant variable (Pranulis, 1984; Walton, 1982). Although publication rates were found to decrease with age, Over (1982) reported that previous productivity was a better predictor of future productivity than age.

Descriptions of productive periods of scholars have been more useful. Pelz and Andrews (1976) described scientists in universities, governmental agencies, and laboratories exhibiting a bimodal distribution of productivity, with peaks at 35 to 44 and 50 to 54 years of age. This bimodal distribution was supported for medical school

faculty with productive peaks at 42 to 44 and 57 to 59 years (Pearse et al., 1976). Further support for a bimodal age distribution for publication productivity with college and university faculty may be found in the literature (Blackburn et al., 1978; Knorr, Mettermeyer, Aichholzer, and Waller, 1979).

One influence which should be considered at this point is the development of a scientific orientation and socialization to a profession through career age. Career age has been defined in a variety of ways: length of time in higher education, length of time in present career, and length of time since the doctoral or terminal degree was earned. These definitions have the same basic intent, to show orientation to and alignment with basic professional goals and value structures in the professions and in academia. Several researchers have entered some form of control for career age in their studies, through sampling design (Crane, 1965), preliminary statistical manipulation of the data (Creswell and Bean, 1981), or through adjustment factors with calculations (Neumann, 1979) for scholarly productivity. In other studies, significant associations with career age and publication productivity have been reported (Bayer & Dutton, 1977; Hall, 1975; Wanner et al., 1980; Walton, 1982). Phillips (1973) found that career age was associated with both quality and quantity of publications of nurses with doctorates. Focusing on longitudinal data for career influences, Baldwin and Blackburn (1981) have reported a decline in scholarly and research interests during the academic career.

Disciplines have variable mean age entry points for their scholars. If career age is based on age at the doctorate, it should

logically follow that if the mean entry point for scholars is significantly later with all other factors constant, then the bimodal distribution should be similarly shifted. This may be the case for nursing at present. Research has shown mean ages for completion of doctoral education for nurses of 41.5 (Brimmer et al., 1983) and 39.4 (Ostmoe, 1982) years. As Ostmoe (1982) illustrated, median ages at receipt of the doctorate are lower for individuals in disciplines other than nursing, with a range of 29.1 to 37.0 years as compared with the median of 40 years in nursing (pp. 95, 97). Some of the influence from the higher median age at which nurses complete doctoral studies may relate to the nature of the population with nursing as a predominantly female discipline. Humphreys (1984) reported a greater overall number of years before the doctorate for women than for men. Still, the question of additional influences should be considered based on Lia-Hoagberg's (1985) findings which revealed the later age at which nurses attain doctoral degrees when compared with other academic women.

For the purposes of exploring scholarly productivity with established nurse researchers in this study, career age has been defined in terms of years of full-time academic appointments rather than age at doctorate. Number of years in nursing (Nieswiadomy, 1984) was not used due to possible additional interpretations which could have been introduced before obtaining the terminal degree, for example, time spent in clinical practice, graduate studies, non-academic teaching positions, unemployment, etc.

Another explanation has been proposed related to career age, accumulative advantage. Allison and Stewart (1974) have hypothesized, "because of feedback through recognition and resources, highly productive scientists maintain or increase their productivity, while scientists who produce little, produce even less later on" (p. 596). Accumulative advantage has been used further to describe the positive relationship between career age and increases among productivity, resources, and esteem (p. 596). Although Fox (1983) has indicated that direct tests of accumulative advantage are lacking, this has implications when the significance of early productivity as a predictor for scholarly productivity and reputational influences are considered.

In general, when other variables are accounted for, chronological age alone has been held to be nonsignificant. Career age has been shown to be a better indicator for scholarly productivity.

Communication with colleagues

In several studies it has been found that high producers communicate frequently with scholars at other institutions (Behymer & Blackburn, 1975; Finkelstein, 1982; Hall, 1975). Communication with other scholars, especially those working in similar areas of research interests, include formal and informal methods, as with written correspondence, telephone communications, contacts at professional meetings, and collaboration on projects. Creswell (1985) has observed that interpersonal communication, especially visits and telephone contacts, with off-campus colleagues affects research performance (p. 38). Blackburn et al. (1978) have reported frequency of communication

with scholars at their institutions is a significant predictor for total article production, and rate of productivity is correlated with interest in research. Finkelstein (1982) described patterns of collegial interactions as more related to scholarly productivity with descriptions of localism (at the departmental level) and cosmopolitanism (at the discipline level). The most prolific publishers were found to be faculty with a combined local and cosmopolitan orientation.

Some differences have been found relative to the sex of the academician and use of communication with colleagues. Astin (1984) observed that women are more restricted in their communication networks than their male cohorts. Yet, differences may occur among women in academia, especially nurse faculty. Frieze and Hanusa (1984) reported that academic women generally demonstrate less communication with colleagues than men but in some fields of science with sufficient women and network systems, networks provide women with both emotional support and current information on developments (p. 158).

Subscriptions to professional journals are another form of communication with colleagues; communication of scientific findings and scholarly information. Ostmo (1982) has related this variable to "informal continuing education." Other researchers refer to professional subscriptions similarly in attempts of scholars to keep current in their own or related fields (Bayer & Dutton, 1977). Generally, the number of subscriptions the scholar has to professional or scientific journals has been found to have a significant positive

association with scholarly productivity. Behymer and Blackburn (1975) have proposed that intrinsic variables such as interest in research, communication with colleagues, and the number of academic journals subscribed to are better predictors of productivity than extrinsic variables as with institutional pressure to publish for promotion (p. 12). Bayer and Dutton (1977) found the number of subscriptions to be statistically significant for all fields investigated but with a decline at mid-career in some fields and an increase at mid-career in others.

In studies with nurses, the number of subscriptions to professional journals has also received support as a correlate of scholarly productivity. Ostmo (1982) reported a median of three to four subscriptions received by her sample (p. 195). Holt (1973) also found that nurse faculty attitudes toward research and theory development were positively related to the number and type of professional journals read regularly.

Early productivity

Publication prior to the doctorate, or early productivity, has been found to be a significant predictor for scholarly productivity. Walton (1982) reported that 54.2 percent of high producers studied had published prior to the doctorate in comparison with 32 percent of the low producers" (p. 311). Blackburn et al. (1978) have found early productivity to be a good predictor of future productivity and although productivity seems to decline over time, high producers continue with productive output and interest levels. In addition to early

productivity, current productivity is further related to past article productivity (Fulton & Trow, 1974; Hall, 1975) with the higher producers continuing at high levels. Other studies supported this positive association between early productivity and subsequent productivity (Clemente, 1973; Manis, 1950; Phillips, 1973). Ostmo (1982) reported that 52.7 percent of all nurse faculty with doctorates in her study had reported publications to their credit prior to earning the doctorate.

Educational background

Many studies on productivity have controlled for faculty with earned doctorates through either the requirement for the terminal degree in the academic setting (Holley, 1977; Jolly, 1983; Neumann, 1979; Pearse et al., 1976) or through their sampling design (Bayer & Dutton, 1977; Blackburn et al., 1978; Cameron & Blackburn, 1981; Clemente, 1973; Cole, 1981; Crane, 1965; Hall, 1975; Hargens et al., 1978; Jauch & Glueck, 1975; Long, 1978; Manis, 1950; Reskin, 1977, 1978). Since some studies of nursing faculty have not used such controls, educational background from the aspect of highest level of completion can be addressed. Holt (1973) and Nieswiadomy (1984) included faculty from diploma, associate degree, baccalaureate, and higher degree programs in their respective samples. Holt (1973) reported that neither the type of basic nursing education program attended nor the amount of education had an effect on attitudes toward research and theory development except through place of employment (p. 1608-B). Yet, Nieswiadomy (1984) found a significant positive

relationship between nurse educators' level of educational preparation and all four measures of research productivity. Ostmo (1982) reported that faculty members with doctorates in her sample were more prolific publishers than master's prepared faculty and further identified differences with respect to type of doctoral degree. In Pranulis' (1984) study of faculty, both educational background and types of research by doctoral degree failed to demonstrate significance, but 98 percent of the respondents identified their educational background as a facilitator of research. Marella (1974) reported a difference between graduate nursing faculty with doctorates in the sciences and faculty with doctoral majors in nursing and education; the former group ranked research as more important, rated themselves more competent in certain methodologies, conducted more research, and had higher publication rates.

Crane (1965) proposed that scientists who receive doctoral degrees from major universities are more likely to be productive and receive recognition, but this may be due to either contacts with eminent scientists or to the creation of a "halo effect" from the prestige of the institution. Further, Crane (1965) did admit that this finding created an elitist view of scientific activity and the data permitted various interpretations (p. 714). Long (1978) called for a reconsideration of the reward system of science and indicated that the "academic department may recruit on the basis of prestige of the mentor and the doctoral department because they have insufficient evidence of the young scientist's productivity" (pp. 905-906). Reskin (1978)

reported that the caliber of the doctoral program is associated with productivity but ascription of better candidates into the better quality departments must also be considered relative to productivity. In consideration of environmental context, Long and McGinnis (1981) reported an association between the organization and scholarly productivity indicating that within three to six years of obtaining a position, the scientist's level of productivity conforms to the context independent of previous productivity, thus, new levels of productivity are determined by the context of the work rather than past productivity levels or environments (pp. 440-441). "Recent research findings suggest that the reputation of academicians are influenced by their affiliations; [yet,] it should be clear that individual reputations significantly influence the larger reputations of academic departments and universities" (Cole, 1981, p. 95).

Facilitators

One facilitator of scholarly productivity is the habit of writing. Hall and Blackburn (1975) reported that the habit of professional writing was the single best predictor for publication productivity of faculty at four-year colleges when rank and other variables were held constant. In an investigation of writing habits and attitudes of faculty at doctoral granting universities, Boice and Johnson (1984) reported that productivity has a significant negative association with writing anxiety but a positive association with writing more than once a week. Writing habits will be discussed in a subsequent section.

Environmental facilitators for scholarly productivity have been investigated in academic nursing contexts. Pranulis (1984) reported the most important influence on nurse faculty research productivity was the presence of extramural funding. The facilitators to research reported by at least 75 percent of the respondents in her study were educational background, personal values, research role responsibilities, other nurses' interest in the problem, administrative support for research, criteria for retention and promotion, and organizational mission, goals and objectives (Pranulis, 1984). Furthermore, environmental characteristics proposed which facilitate productivity included: "(1) organizational emphasis on research that is equal to or greater than its emphasis on teaching or service . . . ; (2) administrative support and role modeling for research; (3) half or more of the faculty engaged in research activities; (4) institutional mechanisms to support and facilitate seeking extramural funding; and (5) interorganizational and interdepartmental procedures to facilitate faculty access to information or subjects for research purposes" (Pranulis, 1984, p. 207).

Batey (1978) studied university schools of nursing that had been awarded major federal funding for research. Following this study, Batey (1981) proposed the following criteria for successful and productive environments:

1. There is an informed and collegial approach to inquiry and to the social system of science . . . ;
2. Inquiry, not just the conduct of studies, is

- integrated into and synthesized with all dimensions of the faculty role;
3. Research is carried out as a natural activity as contrasted to a self conscious behavior;
 4. There are vigorous programs of research that complement each of the major conceptual threads of the academic programs of the school, and those research programs at any one time involve a significant portion of the faculty; and
 5. There is command of sufficient resources to sustain the program. (pp. 56-57)

Family influences

Few studies have yielded support to significant relationships between productivity and family influences, for example, number of dependents and marital status. Hamovitch and Morgenstern (1977) reported that the number of children (dependents) is nonsignificant related to publication productivity. Conversely, Hargens et al. (1978) used two-year publication and citation counts with research chemists in university and governmental settings to show that "having any children costs scientists of both sexes about one and one-half published papers over a two year period" (p. 159).

Marital status has also failed to be shown as a significant correlate of scholarly productivity (Hall, 1975; Ostmo, 1982; Phillips, 1973). Hamovitch and Morgenstern (1977) found a negative correlation between single status and article productivity but this failed to be significant when other variables were controlled. Cole (1981) has reported results from longitudinal studies which indicate:

women scientists who are married turn out to be significantly more prolific than those who are not; and women who are married with one or two

children are slightly more scientifically productive than unmarried women, and only slightly less so than those who are married and without any children. However . . . once a woman has had three or more children there is a decline in research output, but not to a point significantly lower than that found among the unmarried women. Such results fly in the face of conventional wisdom, and we should therefore approach them with caution. (p. 388)

Conversely, Astin (1984) found that academic women publish less than men and receive fewer citations, irrespective of marital status. Further, when demographic factors were compared using 1969 and 1980 data bases, the proportion of academic women had increased and they were more likely to be married and have children, though less than the male cohorts (Astin, 1984).

Parental and early childhood influences have been investigated more in early literature in efforts to identify biographical profiles and predictors of performance and creativity for the encouragement, development, and recruitment of youth into scientific careers (Taylor and Ellison, 1967). Recently, Humphreys (1984) reported that parents of women scientists and engineers had more education, especially the father, than the parents of male scientists. But, like marital status and the number of dependents, most studies have used parental education levels merely to describe the sample, if these are reported at all.

Gender

Several investigators have reported that males are significantly more productive than females in terms of publications (Clemente, 1973; Cole, 1981; Cole & Zuckerman, 1984; Hamovitch & Morgenstern, 1977; Walton, 1982), while other investigators report differences as

nonsignificant (Reskin, 1978). Other studies have shown that women are underrepresented in research universities. Cameron and Blackburn (1981) found that when other variables were statistically controlled, there was no difference in publication productivity by gender. Cole and Zuckerman (1984) have reported that the number of productive women faculty has increased but disparities between gender and productivity have remained stable. In terms of writing habits, Boice and Johnson (1984) observed that gender was not significantly associated with output but differences were apparent with the use of seclusion when writing and the perception of the lack of time reported by women faculty.

Although differences in productivity for men and women are frequently cited in the literature, generally studies have found gender to have poor or no predictive effect on productivity when other variables are controlled (Behymer & Blackburn, 1975; Blackburn et al., 1978; Clemente, 1973). As Cole and Zuckerman (1984) have observed, the variability in productivity is greater within each gender than between genders (p. 248).

Habits

Habits which have been found associated with scholarly productivity include hours per week spent on research activities and writing habits. When productive researchers are compared with their less productive cohorts, hours spent on research have been found to be a significant factor. Walton (1982) reported that the majority of high producers in his study devoted five or more hours per week to research

while a significant majority of low producers spent four hours or less per week on similar activities (p. 310). Blackburn et al. (1978) have suggested that since recent rate of publication is a significant predictor of publication productivity, "the formation of a habit of writing matters most of all" (p. 139). Hall (1975) recommended that "efforts should be made to develop and sustain a 'habit of scholarship,' wherein both [the faculty member and institution] agree to a portion of the workload devoted to research, reading, and writing" (p. 132).

Pranulis (1984) found that faculty who devote time specifically to research activities by setting aside time and adjusting role responsibilities have significantly higher total and publication productivity scores (p. 169). In addition, she characterized productive researchers as devoting 16 or more hours to research a week (Pranulis, 1984, p. 182). Gortner (1985) and Ostmo (1982) similarly report a significant effect on nurse faculty productivity through devotion of percentages of time to research.

Institutional type and mission

Research has revealed differences in productivity of faculty by type of institution: colleges, universities, and types of universities (Baird et al., 1985; Behymer & Blackburn, 1975; Blackburn et al., 1978; Cameron & Blackburn, 1981; Finkelstein, 1984; Fulton & Trow, 1974; Hall, 1975; Ladd, 1979; Pellino et al., 1984; Walton, 1982). Some of these differences have been attributed to whether there was a primary institutional mission for research. Clark (1973) reported that faculty

at church-related colleges perceive less emphasis on research and publication while faculty at both church-related and small public colleges define a greater focus on teaching. Faculty values toward scholarly productivity have also been related to university policy. Blackburn et al. (1978) have observed, "although faculty who publish also most often agree that publishing is important in achieving tenure, these faculty also more often work at institutions where the role expectations and reward systems are consistent with their own career goals" (p. 134).

Andreoli and Musser (1984) have proposed an organizational subsystem in a model for nursing faculty productivity and observe that the university's purposes and goals have a measurable effect on productivity with an agreement needed between the values of the university, the school of nursing, and expected faculty roles (p. 11). Although not tested in her study, Pranulis (1984) proposed "the greater the fit between the individual and the environment, the greater the probability that both the individual's and the organization's goals will be met" (p. 191). At the school level, investigations for similarities in goals and values have been done related to scholarly productivity of faculty. University schools of nursing have been moving in closer alignment with policies of the parent institutions in past years, but much depends on the environment. Over a decade ago, Marella (1974) found disparity between faculty and organizational values when graduate nursing faculty were asked to rank their preferences for seven activities as compared with their perceptions of

institutional policy emphasis. At that point in time, respondents placed teaching as the primary preference at both the individual and institutional levels while weighting of scholarly productivity was more variable. This was somewhat supported five years later when Fawcett (1979) reported prevailing values of teaching and service in schools of nursing as opposed to research in other disciplines. Recently, Pranulis (1984) reported that in the majority of the university schools of nursing she investigated, there was the same or greater emphasis at the school level as at the parent university level with the emphasis being given to teaching graduate students, conducting research, and communicating research. Undergraduate teaching was found to be ranked in fourth place at these same schools at both the school and university level (Pranulis, 1984). The conflicting results between the studies by Marella and Pranulis may be due to methodologies, with Marella sampling a more diverse and larger population while Pranulis obtained her organizational data from one resource person at each of the ten university schools of nursing. On the other hand, consideration must be given to institutional context along with the fact that nursing is moving more in line with academia with upgraded standards (M. I. Murphy, 1985; O'Shea, 1986), especially at the university levels.

Mentorship

May, Meleis and Winstead-Fry (1982) have proposed that mentorship is "essential for the scholarly development of nurses and for the integration of the scholarly role in the self" (p. 22). Mentoring has been described as "the cultivation of young talent and the promotion of

career development through the lending of organizational, role, or interpersonal support and teaching" (Hagerty, 1986, p. 17).

Studies on faculty productivity have given greater attention to sponsorship. Sponsorship further enhances the young scientist's visibility in the scientific community (May et al., 1982, p. 24). Manis (1950) reported that scientists who have had prestigious sponsors are more likely to be productive themselves. This has been supported by Cameron and Blackburn (1981) who reported, "both financial support and early collaboration with senior faculty signal a social selection process that impacts significantly on outcome measures . . ." of publication rate, grants received, collaborations, and professional network (p. 372). Yet, distinctions should be drawn between the sponsor's reputation and measures of productivity and visibility of the individual sponsored. Reskin (1978) reported that the sponsor's productivity affected only early recognition, not enduring productivity.

Further investigation of mentorship is needed with regard to scholarly productivity, especially following doctoral education. Long and McGinnis (1981) report that the mentor's overall effects on the mentee's first job are quite small (p. 430). Yet, eminent scientists have been shown to be influenced early in their careers by other eminent scientists (Zuckerman, 1967). Greater information on the influences of mentorship on both the young and the senior scholars is needed, especially in nursing.

Mobility

Job mobility has been defined as the number of career moves. As such, mobility has been found to have poor predictive effects for productivity when other factors are constant (Behymer & Blackburn, 1975; Blackburn et al., 1978). Long (1978) reported that mobility occurs later in the career and still the effects of prestige of the new department are weakly associated with the faculty member's productivity. One area that has received less attention in terms of mobility is the environmental character of the position change. Blackburn and Havighurst (1979), who investigated career stage data with older and retired male faculty members, found that very active and active scholarly productive faculty moved to research universities in job changes while moderately active and inactive faculty moved to colleges or non research universities (p. 561).

Pranulis (1984) controlled for current mobility in her sampling design and Ostmo (1982) did not address mobility. Part of this diminished focus may be due to the fact that nurses are predominantly women. Cole (1979) has indicated that, "on the whole, women scientists are not as mobile as men, more often feeling tied to a particular geographic location because of the work requirements of their husbands" (p. 12). This limitation on mobility has been supported by Finkelstein (1984) who reported two main constraints on the career mobility of academic women, enforced mobility or immobility due to the spouse's employment. Yet, Sorensen, Van Ort, and Weinstein (1985) observed that doctoral preparation appears to add stability, reporting that only 20

percent of the 32 percent of tenure track nursing faculty who left positions in 30 research universities during 1979-1982 had doctoral degrees (p. 138). But when considering the effects of mobility on research, Brimmer et al. (1983) found that the mean percent of time spent in research activities for all nurses with doctorates studied stayed the same whether or not they had changed positions or held the same position following awarding of the doctorate (p. 162). Therefore, job mobility has had limited significance in studies of scholarly productivity, especially with nurses.

Professional societies

Membership in professional societies implies access to a professional information, value, and network system. In a study of scientists and social scientists in Naval laboratories, Friedlander (1971) found a significant positive correlation between membership in professional societies and scholarly productivity. Cameron and Blackburn (1981) have reported a gender difference, with male faculty members demonstrating a greater use of networks such as professional societies. Some differences are to be expected in nursing with its history as a predominantly female profession and less emphasis on scholarship than some of the other professions. Still, membership in professional societies and the use of networks may be more accessible in nursing than in some of the male dominated professions. Ostmo (1982) reported the number of academic and professional memberships was positively correlated with publication quantity and quality and further demonstrated that fellows of the American Academy of Nursing and

members of the American Association of Critical Care Nurses are more prolific publishers than their non-member counterparts (p. 173). Although not specifically addressing professional nursing societies in her study, Pranulis (1984) was able to report a significant relationship between productivity and recognition from both nursing and non nursing groups.

Publication preferences

Differences among disciplines in terms of publication preferences have been cited by Astin (1984), Finkelstein (1984), Ladd, (1979), and others. Using a large national data base and a model to categorize academic disciplines along the six dimensions of hard-soft, pure-applied, and life-non life, Creswell and Bean (1981) discovered differences in publication and funding sources by disciplinary groups. Faculty in the "hard" areas published more journal articles while faculty in the "soft" areas published more books and monographs and faculty with a "pure" orientation attracted more federal research funding while faculty in "applied" areas attracted more funding from private industry (Creswell & Bean, 1981, pp. 83-84). Blackburn et al. (1978) used three dependent measures of publication productivity and found that although rate of article production over a two year period and total career article publication were highly correlated, the total career book publication was related to academic discipline rather than a measure across disciplines. Neumann (1979) has observed that

articles, a relatively short form of communication, are more important in the physical sciences with a high level of consensus about the specification of

the research problem, the methodology employed and the interpretation of the findings. Books, on the other hand, are a dominant forms of communication in less developed fields and less important in more developed fields. Therefore, the relative salience of books is greater in the social sciences than in the physical sciences. (p. 94)

Influences of disciplinary preferences can be seen through use of measures for productivity, with some of the natural and biological sciences focusing on article and citation counts rather than longer forms of communication. The influence of and preferences in the nursing literature is an area for consideration, although definitive conclusions cannot be made at this point. Nursing Research, the first journal devoted to scholarship in nursing, was initially published in 1952. Other professional journals devoted to scholarship have become available predominantly in the past decade and a half. Fagin (1982) has reported that nursing is currently involved in establishing its identity as an academic profession with research productivity intimately linked to success in this endeavor (pp. 67-68). Journal articles are a major form of the needed communication, but at this point, relative dominance over longer forms of communication cannot be specified. Baird et al. (1985) have reported relative means of importance for the different publication forms. While the differences appear negligible for the total sample of schools reporting importances of these publication forms, greater variability is apparent between the type of institution and the form of publication. Publication preferences are becoming more apparent in nursing, and will continue to do so in the near future.

Requirements for retention, promotion, and tenure

University policies and procedures affect faculty productivity directly (Andreoli & Musser, 1984, p. 11). In a study to define scholarly activity for the development of a faculty evaluation model, Baird et al. (1985) found that scholarly activity was considered highly important for promotion and tenure considerations in over 50 percent of the baccalaureate and baccalaureate and higher degree schools of nursing studied. This same study on defining scholarly activities further demonstrated variable interpretations of the importance of individual activities. Murphy (1985), in a study of tenure in baccalaureate and higher degree programs, reported an increased trend for tenure requirements for nurses to be the same as for other faculty in academia. In studies of scholarly productivity, institutional requirements for promotion and tenure have been found to be significantly associated with productivity, but as one of the weaker predictors (Behymer & Blackburn, 1975; Hall, 1975). Ostmo (1982) reported that beliefs of what should be the relationship between publication and promotion and tenure was a significant predictor of productivity, with over 90 percent of nursing faculty indicating that publication was either very or moderately important in achieving tenure. Further, Pranulis observed that 75 percent of her respondents reported a positive influence on their research from the organizational emphasis (Pranulis & Gortner, 1985, p. 129).

Research preferences

At the individual level, an orientation to or preference for research has been shown to be related to productivity. Researchers have found an interest in research strongly predictive of productivity (Behymer & Blackburn, 1975; Hall & Blackburn, 1975). Walton (1982) reported research preferences to be significant and demonstrated that high producers preferred research over teaching while the opposite was true for low producers. Blackburn et al. (1978) reported that high producers express more of an interest in research and, although interest and productivity have been shown to decline with age, the decrease is only relative with the high producers still more productive and demonstrating interest in research over the low or moderate producers (pp. 134-135).

Similar findings have been reported in studies on scholarly productivity with nursing faculty. Ostmo (1982) reported that research and publication interests were significant as were five measures of motivators to publication: for enjoyment, to advance knowledge, faculty obligation, professional obligation, and personal prestige. Of the personal variables related to research productivity investigated by Pranulis (1984), only the respondent's identity as a nurse researcher was found to be significantly related to productivity.

Size

Institution and department size have been found to be without much predictive value; however, communication is facilitated with minimums of 11 to 15 faculty members and a maximum of 41 faculty members in the

department (Behymer and Blackburn, 1975; Blackburn et al., 1978). When investigating research productivity in academic and industrial settings in Austria, Knorr, Mettermeyer, Aichholzer, and Waller (1979) reported a significant negative correlation with the size of the research group. In the organizational literature, Kimberly (1976) has proposed that size has been used too globally to permit its relation to organizational structure to be understood, whereas size conceptualized as a dimension of context is a more valuable measure. Neither Ostmo (1982) nor Pranulis (1984) reported overall or clinical student to faculty ratios for their respective study participants. Both researchers observed a low number of weekly clinical hours reported by the faculty and speculated as to the cause. No indication was made as to faculty or program sizes. Still, faculty load was not significant while teaching responsibilities were negatively associated with scholarly productivity.

Specialty areas

Specialty areas of faculty have been addressed more frequently among disciplines rather than within disciplines. Relative to within discipline specialties, nonsignificant differences have been reported on areas in chemistry (Reskin, 1977), counselor education (Walton, 1982), and nursing (Nieswiadomy, 1984). Jolly (1983), who studied physicians to determine research involvement, found that basic scientists demonstrated most effort in research. Lane et al. (1981) reported low levels of research participation among both master's prepared (25 percent) and doctorally prepared (59 percent) faculty but

respondents whose specialty was community health nursing participated most frequently (p. 113). Although the differences were not significant, Nieswiadomy (1984) observed a trend for faculty prepared in psychiatric-mental health nursing being involved in a greater number of research studies than faculty prepared in other specialties. Ostmo (1982) reported significant relationships between both dependent measures of quantity and quality of publications and the independent variables of doctoral program discipline, doctoral program major, clinical focus of first master's degree, and functional focus of first master's degree.

Teaching responsibilities

Teaching and research are integral roles in academia. Fulton and Trow (1974) found that faculty who are most active in research also teach nearly as much as those faculty who are less productive (p. 68). Hall (1975) reported teaching load and class size as nonsignificant variables in his study of publication productivity of faculty at four-year colleges. Other studies have demonstrated significant differences by types of teaching responsibility. Blackburn et al. (1978) reported that faculty teaching graduate students are "approximately six times as likely to have produced five or more articles over a two year period than are those teaching undergraduates" (p. 136). Hamovitch and Morgenstern (1977) observed that the number of weekly hours teaching and teaching only undergraduates are negatively correlated with the number of articles published. When the highest level of nursing education offered by the employer was considered,

Nieswiadomy (1984) reported that the majority of current research was being conducted by nursing faculty in schools with graduate nursing programs.

Partially related to level of students or programs offered is the influence of clinical teaching for many nurse academicians. Ostmo (1982, 1986) found significantly negative correlations between hours of clinical instruction and publication productivity, highest degree earned, time spent in research, and level of students taught (p. 202). Teaching responsibilities have been perceived as hindrances by graduate nursing faculty (Marella, 1974), with 71.8 percent in another study reporting teaching responsibilities as an inhibitor to research activities (Pranulis, 1984, p. 118).

Tenure

Research on the relationship between tenure status and faculty productivity has resulted in conflicting findings. It has been observed that once the requirement for productivity for tenure approval has been removed, output declines (Holley, 1977). Neumann (1979) reported that tenured faculty had a significantly higher rate of productivity than non tenured faculty in the majority of graduate departments studied. Other studies have found that tenure status has negligible or no predictive power for productivity when other factors are held constant (Behymer & Blackburn, 1975; Blackburn et al., 1978; Nieswiadomy, 1984; Walton, 1982). Blackburn et al. (1978) observed that tenure is not the cause of any decrease in faculty productivity (p. 139). In fact, Holley (1977) proposed that in high level research

institutions, the type of output after tenure changes from the pre-tenure patterns of articles published to favor long range projects (p. 187).

It may still be of value to investigate tenure status with nursing faculty. "Unlike traditional academic university programs where nearly two-thirds of faculty have tenure, fewer than one-third of nursing faculty at academic medical centers are tenured; several nursing schools in these settings do not even offer tenure" (Andreoli & Musser, 1984, p. 9). Pranulis (1984) reported tenure status as a demographic variable with 77.5 percent of her respondents having tenure (p. 65). Ostmo (1982) considered age at acceptance of first tenure track appointment and, although this was not significant in the analysis, reported a mean faculty age of 34.5 years (p. 98).

Measures of Scholarly Productivity

Three measures of scholarly productivity have commonly been used in the literature. Creswell (1985) has identified these methods as (1) publication counts used to measure quantity, including straight counts or weighted counts; (2) citation counts which measure quality and influence; and (3) ratings by peers or colleagues to measure reputation (pp. 7-8). Smith and Fieldler (1971) recommend the use of multiple criteria for estimating the scholar's importance including eminence, productivity, recognition, and journal quality (pp. 226-232).

Use of publications to quantify scholarly output requires the specification of items to be counted and the time frame in which to do so. Jauch and Glueck (1975) have reported that these simple counts are

effective but researchers and university administrators fail to credit this effectiveness, necessitating the inclusion of a journal quality index (p. 74). Straight counts through self report have been used for cumulative journal articles (Hall, 1975; Hall & Blackburn, 1975), all publications (Roe, 1965), cumulative and two-year counts for books and articles (Blackburn et al., 1978), and five-year counts for specified items (Gunne & Stout, 1980). Over (1982) utilized a straight count for articles listed in abstract reference volumes. Clemente (1973) used a weighted scheme developed for the discipline (Glenn and Villemez, 1970) that allocated 30 points to research or theory books, 15 points to textbooks, 10 points to edited books, and a range of four to 10 points to articles specific to individual journals. Holley (1977) weighted articles by a mean quality index and then adjusted for the number of years in which productivity could have occurred. Neumann (1979) used a straight count for books and articles and then divided by the number of years since receipt of the highest degree to adjust for age of the scientist. Crane (1965) designated publications as major and minor with a book or four articles on the same or a related topic assigned "major" status and four points. Honors received were also considered by Crane in her measures of productivity. Cameron and Blackburn (1981) used a weighted measure similar to Crane's and added self reports on grants received in the past three years, rates of collaboration since doctorate, and scores from questions on professional associations and publication network involvement. Fulton and Trow (1974) used a categorization scheme for a two-year period of professional writings:

(1) inactive, not currently publishing or active; (2) no recent publications (3) few current publications, between one and four; and (4) many current publications, five or greater. Creswell and Bean (1981) used cumulative and two-year publication counts for book and articles plus reports on research funding in the past year and cumulative research grants from five different sources.

Other researchers have used a combination of approaches including citations and ratings. Manis (1950) used a weighted count with single authored books assigned 18 points, co-authored books equal to 18 points divided by the number of authors, and articles, bulletins, and edited books equal to one point each. A categorization for age was then used as a correction measure. Manis' (1950) second measure for productivity was adjudged quality of the contributions based on peer ratings. Walton (1982) used self reports on cumulative and two-year article counts, total books and monographs, involvement in sponsored research, and citation counts. Bayer and Dutton (1977) used cumulative book counts and cumulative and two-year article counts, plus reports on works cited, engagement in pure or basic research, average hours per week spent in research, number of journal subscriptions, and off-campus paid consulting. Article counts using printed abstracts or curriculum vitae plus counts of citations by others have also be used (Cole, 1979; Cole & Zuckerman, 1984; Hargens, McCann, & Reskin, 1978; Long, 1978; Long and McGinnis, 1981; Reskin, 1977, 1978) with data with variable time frames.

An additional comment must be made at this point concerning the use of data bases. Several studies reviewed have been based on data from specific data bases including the 1969 American Council on Education - Carnegie Commission data (Behymer & Blackburn, 1975; Blackburn et al., 1978; Fulton & Trow, 1974; Hall, 1975; Hall & Blackburn, 1975; Hamovitch & Morgenstern, 1977), the 1972-1973 American Council on Education data (Bayer & Dutton, 1977), the 1977 Ladd and Lipsett study (Creswell & Bean, 1982, Ladd, 1979; Wanner et al., 1980), and the 1980 Higher Education Research Institute (Austin, 1984). Although some of these studies have used secondary data analyses, subsamples of the data, or complementary studies, the research findings were based on a similar pool of data.

In nursing, a variety of dependent measures have also been used. Ostmoe (1982, 1986) considered both unweighted and weighted counts based single authorship, co-authorship, and multiple authorship for books, edited books, monographs, book chapters, and articles. Books were weighted as four points, all other items were weighted as one point, and then divided by the numbers of authors credited for the work. To consider further quality of publications, Ostmoe used 10 specified nursing journals and calculated publication productivity in the same weighted and unweighted manner, based on authorship. Due to high positive correlations found between weighted and unweighted quantity of publication scores, (Ostmoe 1986) has recommended the elimination of weighted counts based on authorship and a greater focus on quality of the publications (p. 211). Pranulis (1984) adapted the

work of Ostmo and used a weighted count for publications, paper presentations, and other tangible products based on self reports from nurse doctorates. No distinction was made for single or multiple authorship with books assigned four points, papers in refereed journals or presented at national or international meetings assigned two points, papers in non refereed journals or presented at regional or interstate meetings, symposium proceedings, book chapters and other tangible products assigned one point, and papers presented at local meetings assigned one-half point each. Nieswiadomy (1984) used nurse educators' self reports of number of degree studies, number of non-degree studies, number of published studies, and number of present studies.

Lia-Hoagberg (1985) used straight counts for types and numbers of publications along with time spent on specific scholarly activities by nurse doctorates. Phillips (1973) used a qualitative and quantitative index during a review of selected volumes of journals published. Baird et al. (1985) reported means of importance from respondent schools based on a five-point scale for 35 scholarly activities listed on a questionnaire.

Some bibliographic and publication credit indicators are less developed in nursing as compared with other disciplines. Use of citation counts as a measure of peer recognition or influence of a scholar's work has been used in chemistry, psychology, and other disciplines in which data bases and author indexing are more established to gauge webs of influence. In nursing, such sources are less conducive to effective measurement. For example, the Science

Citation Index has nursing journals listed with variable journal titles and volumes in each index. In addition, two of the top five journals rated highest in scholarship by deans (Fagin, 1982), Advances in Nursing Science and Western Journal of Nursing Research are not included in the current index. Similarly, credit based on contributions of multiple authorship is less established in nursing than in some other disciplines. In an assessment of the views of nurses in assigning publication credit, Werley, Murphy, Gosch, Gottesmann, and Newcomb (1981) concluded that nursing had not yet developed an ethical principle of assigning authorship to contributions (p. 262). Several years later, Waltz, Nelson, and Chambers (1985) reported that nurses are in clearer agreement on assignment of authorship credit than their colleagues in other health fields but that further discussion is needed in the area of collaboration on research.

Overall, studies on scholarly productivity have used quantifiable measures to evaluate levels of accomplishments of scholars. Still, there is an indication of an elusive variability among scientists and scholars perhaps related to broader issues with the reward system and values of science.

Eminence

The issue of eminence of both institutions and scholars is germane to the discussion since this study has been based on the assumption that increased research and scholarly activities by established nurse researchers occurs at leading academic institutions. "Prestige in the scientific community is largely graded in terms of the extent to which

scientists are held to have contributed to the advancement of knowledge in their fields and is far less influenced by other kinds of role performances, such as teaching, involvement in the politics of science, or in organizing research" (Zuckerman, 1977, p. 9). Eminence, or prestige, of institutions and scholars has been studied with variable relationships reported. Whether the source for further status or reputation through productivity is the institution, the university department (discipline), the scholar's doctoral program, or the scholar's productivity record, eminence has generally been shown to be a factor related to scholarly productivity.

Institutional Eminence

Studies in higher education have considered the influence of institutional reputation on scholarly productivity using a variety of measures and terminology. In a study of sociologists in academic settings, Manis (1950) reported the dependent measures of volume of publication and adjudged quality of publications were positively correlated with the eminence of the institution. Neumann (1979) used departmental quality levels (distinguished, strong, good, and adequate plus) as a sampling frame to study research productivity of tenured and nontenured graduate faculty in four academic disciplines. Cameron and Blackburn (1981) found a significant effect for sponsorship (departmental reputation) but were uncertain whether this variable was related to ascription or achievement of faculty in the three disciplines studied (p. 374). Long (1978) investigated the relationship between productivity and position in the careers of

biochemists in graduate programs for evidence of departmental effect versus selection effect. Longitudinal findings indicated that quantity of publications and citations are facilitated by departmental location (prestige) rather than selection (Long, 1978, p. 902). Fulton and Trow (1974), using three levels of quality to classify institutions based on characteristics and qualifications of faculty and students and on institutional resources, described the distribution of research activities and the trend for continuing research activity in leading and middle quality universities (p. 71). Crane (1965) reported a positive relationship for productivity and scientific recognition when compared with prestige of the institution. Blackburn, Behymer, and Hall (1978) investigated faculty publication productivity and found that faculty affiliated with high prestige colleges and universities exhibit greater productivity than faculty at lower prestige institutions. In an earlier study by Behymer and Blackburn (1975), a significant relationship was found between institutional prestige and publication productivity for faculty at four-year and graduate institutions. Still, in a study that same year confined to faculty at four-year colleges, Hall (1975) reported that institutional prestige was not a significant predictor of publication productivity. Wanner et al. (1980) used an interdisciplinary basis and have reported a significant relationship between scientific productivity and institutional quality yet stress the need to consider the context of individual disciplines. Long and McGinnis (1981) have reported, "organizational context emerges as a strong factor determining not only

levels of productivity, but also, and more importantly, changes in rates of productivity occurring after a position is obtained" (p. 435). Zuckerman (1977) has described a multiplier effect that distinguished scientists have through attraction of other established scientists and needed resources which further enhances the standing of the organization (p. 250).

In a study prepared for the National League for Nursing, Wandelt, Duffy, and Pollock (1985) used a qualitative approach to describe components, interactions, and interrelationships in top-ranked schools of nursing. Purposeful samples of administrators, faculty, and students were interviewed in groups of six at six top-ranked schools of nursing randomly selected from a list of the 20 top-ranked schools identified in an earlier study by Chamings (1984). The investigators considered a variety of elements influencing reputational status of these schools. Although research and scholarly productivity of faculty were not directly addressed in the interview guide, Wandelt et al. (1985) concluded that perceptions about research were interwoven in descriptions by all groups as components of the schools of nursing, especially with reference to the dean, faculty, and curricula (p. 131). Wandelt et al. (1985) further reported the "value" faculty placed on publications was seen as an obligation for sharing findings, with research viewed as contributing to growth, learning, and the quality of teaching (p. 45).

Individual Eminence

Individual background factors have been considered in several classic studies of eminent male scientists. Roe (1952) used three forms of psychological tests and life histories to study eminent American scientists considered most likely to exemplify special qualities associated with success in research. Panels of experts in three disciplines identified the eminent researchers studied. Subsequent to this four-year study, Roe (1952) presented a profile of the "average eminent scientist" whom she characterized as first-born son of a middle class professional man, of high intelligence, satisfied with his chosen profession but with a driving absorption in work, and who developed a research interest following a college project (p. 22). In a follow-up study with 52 of the same 64 scientists, Roe (1965) concluded that there had been few changes in the work habits of these men over time, in that they continued to contribute at a high level, and they had received much recognition from their peers. Roe (1965) also reported on one frequent comment from the scientists: the need for long stretches of time for research (p. 317).

Cattell and Drevdahl (1955) used a 16-factor personality test to compare the personality profiles of eminent researchers with the general adult population and with a sample of eminent teachers and administrators with negligible research contributions. Natural and social science researchers studied were selected by committees based on eminence in their professional society. Researchers were found to be more self-sufficient, emotionally unstable, bohemianly unconcerned,

radical, dominant, paranoid, and intelligent (Cattell & Drevdahl, 1955, p. 259).

Simon (1974) investigated work habits and professional accomplishments of eminent scientists to look at the relationships between work habits, scholarly productivity, and success. These eminent scientists were selected, also by panels of experts, as the 20 most outstanding scholars living in the United States. Findings revealed a long-term dedication of time and effort to work. Typical working days ranged from four to 16 hours in length, 200 to 360 days per year (Simon, 1974, p. 329). Most of the scientists indicated that they did their writing at home, with approximately 70 percent indicating their best work was done in the morning hours. In addition, most of the scientists claimed that they made their most significant contributions while holding regular academic appointments involving teaching and administrative responsibilities (Simon, 1974, p. 335).

One of the most in-depth investigations of eminent scientists has been done by Zuckerman (1967, 1977) with nobel laureates and other leading men of science. Zuckerman (1977) used a variety of data with these groups of distinguished scientists to investigate the development of knowledge and the stratification system of science. Elite scientists were profiled as sons of upper and middle class professional men who attended a limited group of elite universities for both graduate and undergraduate studies. Zuckerman (1977) hypothesized that this background provided educational and social advantages early in the career of these scientists. She further observed that "future members

of the scientific elite have moved toward homogeneity among themselves and differentiation from other scientists" (p. 95). Laureates were characterized as having a strong sense of their own ability, a strong ego, internalized exacting standards of work, and demanding standards for judging scientific work (Zuckerman, 1977, pp. 122-126). The laureates-to-be were described as having acquired much through their professional socialization process with self-selected eminent sponsors in which norms and standards, values and attitudes, knowledge skills and behaviors, and a sense of significant areas for investigation were obtained (Zuckerman, 1977, pp. 123-127). Laureates-to-be were found to have a greater number of collaborative endeavors but not a significantly greater number of single publications, though they were still prolific. Some of the influences cited related to exacting standards for publication and emphasis on quality rather than quantity. In addition, following receipt of the Nobel prize, the laureates often took last authorship, or even deleted their name from the list of authors, regardless of contributions to the project. Zuckerman (1977) has stated, "as they move through the scientific career, we can observe the process by which prestige begets prestige, making them, relative to other scientists, increasingly 'rich' in resources, opportunities, and esteem" (p. 207).

Cumulative advantage

Related to institutional and individual eminence is the issue of cumulative advantage. The stratification hierarchies of institutional and individual eminence are interconnected through exchanges of

prestige and through self-selection and selected recruitment (Zuckerman, 1977, p. 250). The interaction between reputational standing and scientific awards (Cole, 1979) provides the basis for cumulative advantage. Zuckerman (1977) has proposed two models of cumulative advantage: (1) additive, in which benefits accrue due to ascribed advantages irrespective of occupational role performance, and (2) multiplicative, in which recipients achieve more based on functionally relevant criteria for role performance (p. 60).

Cumulative advantage has been described using path analysis (Allison & Stewart, 1974) and causal relationships. Austin (1984) has described the causal chain of cumulative advantage for an individual:

"publication, lecture appearances, and participation in informal gatherings lead to colleague recognition, which in turn leads to more visibility, which leads to more citations and honors, which in turn leads to greater colleague recognition and so on" (pp. 262-263).

The advantage for the individual scientist is what Merton referred to as the "Matthew Effect." Using some of Zuckerman's data, Merton (1968) described the "Matthew Effect" to address recognition of scientists through the reward and communication systems of science: "eminent scientists get disproportionately greater credit for their contributions to science while relatively unknown scientists tend to get disproportionately little credit for comparable contributions" (p. 57). Cole (1979) describes reputation affecting the reward structure of the scientist in two ways: (1) intrinsically with the accrual of awards through status and recognition among peers and (2) extrinsically

as a commodity exchangeable for future opportunities for scholarly productivity and positional recognition (p. 95). Zuckerman (1977) has proposed that cumulative advantage actually "helps to account for the growing disparities between the elite and other scientists in the extent and importance of their research contributions over the course of their careers" (p. xiii).

In nursing, reward structures have not been systematically investigated, nor have eminent nurse scientists. Some studies, through sample selection, have included individuals or environments which could be considered as a more elite group. Batey (1978) focused on 12 university nursing environments which had received federal funding for development of research environments in order to promote the potential for receipt of biomedical research grants. Pranulis (1984) indicated that her sample of respondents was representative of the population of nurses with doctorates, yet the population of nurse doctorates has been estimated at 0.15 percent of the work force (Anderson, Roth, & Palmer, 1985). This group of nurse doctorates may then be considered as a select group with some form of demonstrated scholarly accomplishments, even without considering the selection criteria for the environments used. Lia-Hoagberg (1985) and Ostmo (1982) similarly used selection criteria for inclusion of nurse doctorates in their respective studies. Although not evaluated with a sample of nurses, cumulative advantage has been shown to be related to scholarly productivity in the broader academic community. As such, established nurse researchers with recognized research accomplishments should similarly be identifiable in terms of scholarly productivity.

Recommendations from the Literature

Three recommendations from recent studies on nurse faculty productivity are particularly relevant to this investigation. Ostmo (1986) indicated that "studies which utilize a population of prolific publishers may identify the more discerning, intrinsic or subtle factors associated with publication productivity" (p. 211). In addition, Pranulis (1984) reported that since the development of an identity as a nurse researcher was the only significant individual characteristic found to be associated with research productivity, studies are needed to identify influences on the development of this identity (p. 212). With particular attention to women doctorates, Lia-Hoagberg (1985) stressed the importance of investigation of professional socialization and the effects of institutional, departmental, personal, and professional support systems on research productivity (p. 159).

Further investigation is needed aimed at addressing these recommendations and the current priority in nursing for the development of environments that support and encourage nursing inquiry (American Nurses' Association Cabinet on Nursing Research, 1985; Brimmer et al., 1983). Through investigation into the characteristics of our established and successful nurse researchers and their environments, a greater understanding of the factors associated with scholarly productivity is needed to extend the current body of knowledge on the development of nursing science. In addition, attention to contextual factors that promote identification of nurses as scientists

and researchers will help to stimulate effective generation, dissemination, and utilization of research in nursing.

Summary

This chapter has included a review of literature relevant to scholarly productivity in science, academia, and nursing. Studies of institutional productivity have been aimed at providing an awareness of scholarly productive sites. Individual productivity has been studied more frequently to describe, explain, or predict the correlates of scholarly productivity. Significant influences on productivity have included academic rank, career age, communication with colleagues, early productivity, time devoted to research and writing, institutional type, mission and policies, membership in professional societies, publication preferences, and teaching responsibilities. Measures of scholarly productivity have most frequently focused on publication as a quantifiable measure of research outcomes. Simple counts of publications have been furthered with other measures to address the scholar's web of influence and participation in the reward system of science. Eminence of the institution and the scholar generally have been found to influence productivity significantly with the effects from the environment and accumulated advantages providing a greater awareness of and resources to certain scholars. Recommendations from past studies on scholarly productivity in nursing have been discussed as relevant to the current investigation in addressing characteristics of leading researchers for developing an understanding of the behaviors and influences associated with recognized scholarly accomplishments in nursing.

CHAPTER III METHODOLOGY

In this chapter, the research methodology is presented. First, development of the study is described, including a description of environments. Secondly, the research design is described with a discussion of subjects and instruments, followed by a discussion of data collection and analysis procedures used to address the research questions.

Study Development

To address the research questions, several exploratory research methods have been used for triangulation of data. Fawcett (1984), Sweeney (1985), and other nurse scholars have advocated multiple modes of inquiry and have proposed that the nature of the research questions and the phenomena to be studied dictate the methods to be used for the research design and methodology. Illustrating the progress made in the design and analysis of qualitative research, Miles and Huberman (1984) have stated: "the expansion of qualitative inquiry continues, advanced in no small way by the reformulations of methodologists who originally took 'hard nosed,' quantitatively oriented approaches to problems of generating valid knowledge; they have now shifted substantially toward the endorsement of content-embedded qualitative inquiry" (p. 15). Miles and Huberman (1984) further support multimethod approaches in qualitative inquiry.

The first step toward addressing the research questions was to develop criteria that would assist in defining the term "established nurse researcher." Numerous studies have been conducted that examine scholarly productivity within academic disciplines. These studies have been primarily descriptive and correlational in nature. Variables of interest have been diverse and few have been significant predictors of scholarly productivity across all studies. Established nurse researchers were assumed to share similar characteristics. Academic division (nursing), highest degree attained (earned doctorate), and graduate departmental offerings were considered control variables due to the criteria for the selection of the environments (leading academic institutions).

Environments

One of the initial steps in development of the research study was identification of the environmental context of nursing's most established researchers. The assumption for this step was that there is a greater proportion of established nurse researchers at the leading academic institutions. Research and scholarship are esteemed values in higher education. Universities generally subscribe to the tripartite missions of higher education, instruction, research, and service, yet one of these missions may have more demonstrated value and attention in a particular institution. In many universities, research has been given such status. Kasten (1984) states that emphasis on research enhances the reputation of the institution nationally and internationally. Attention to the research mission is evident in some

of the currently used classification schemes. The most widely cited classification system is the one developed by the Carnegie Council on Policy Studies In Higher Education (1976) which is currently planning a second revision. This classification system is based on institutional characteristics such as degree offerings, degrees awarded, federal support for research, student body size, and prestige of the institution. Two categories for doctoral granting institutions, Research University I and Research University II, specify the receipt of leading federal financial support for research activities. Specialized institutions may also receive sizable funding for research activities but the classification in this case is based on autonomy from the parent institution with the unit's major focus on a specialized rather than a liberal arts curriculum. Based on a review of the literature, an additional assumption of this study was that increased research and scholarly activity occurs in certain established institutions which can be identified through factors related to institutional reputation or prestige.

In order to consider institutional reputation, the literature was reviewed for rating schemes developed and reported for schools of nursing. Each rating scheme had inherent weaknesses. Margulies and Blau (1973) conducted an original study of professional schools and based a listing on the subjective ratings of the five top schools as provided by deans. This study was later replicated (Blau & Margulies, 1974-75) in the attempt to achieve a greater response rate and validate the original listing. Chamings (1984) used a similar methodology by

asking deans and nurse researchers to rank what they considered to be the top 10 schools. Chamings' study was an attempt to update the earlier studies by Margulies and Blau in relation to professional schools of nursing. As with the earlier studies, some bias must be questioned in relation to the low response rate for deans and the moderate response rate for members of the Council of Nurse Researchers. Hayter and Rice surveyed the literature in three nursing journals and developed a ranking of the top schools in institutional productivity based on first authorship. Hayter (1984) later replicated this methodology with a broader base of 13 journals of nursing. Still, restriction of range to a limited sample of journals and the retrospective time frame used must be considered in relation to the one form of publication productivity measured. Results from the rankings in these five studies are illustrated in Table 3.

No one rating scheme seems adequate to determine objectively the top 10 schools. In evaluating any one rating scheme further consideration should include data relative to the respondents' available knowledge of history and current events in certain institutions, personal preferences for certain institutions, affiliated faculty or the associated curricular, and bases for decision making. In an effort to mediate some of the confounding influences, five different rankings were used in the current research to identify environments for study.

Using the rankings from these five studies, a list of 10 schools was developed for the purpose of this investigation. Three schools

were listed as the leading schools in all five studies and three additional schools were common to four of the five studies. No school was found to be listed in only three of the five studies. Eight schools were listed in two of the five rankings while three schools were present in only one of the five listings. The six schools with the two highest rates of appearance in these rankings were automatically included. Due to the nature of the ordinal data of the rankings of the next eight schools, four schools were selected for study using a table of random numbers. The final list of schools selected for investigation is displayed in Table 4. It may be noted that each of these institutions has a graduate division in the school of nursing. In addition, these institutions meet the 4.6 criteria from the Gourman Report (Gourman, 1980, 1983) used by Pranulis (1984) in selection of sites for investigation of nurse faculty research productivity. Further, although five rating schemes were utilized in the current research to develop a list of leading schools, all schools selected were included in the pool from which Wandelt et al. (1985) selected their six sites with 3 sites common to both studies. These institutions, selected as sites for investigation of established nurse researchers, shall be considered as representative of the group of leading schools rather than associated with any definitive ranking of reputational or scholarly productivity.

Table 3

Leading Schools of Nursing Listed by Literature Source

Margulies & Blau (1973)	Blau & Margulies (1974-75)	Hayter & Rice (1979)	Hayter (1984)	Chamings (1984)
1. Case Western Reserve	1. Case Western Reserve	1. University of Washington	1. University of Washington	1. University of Washington
2. University of California at San Francisco	2. University of Washington	2. University of California San Francisco	2. University of Pennsylvania	2. Case Western Reserve
3. University of Washington	3. University of California at San Francisco	3. University of California Los Angeles	3. University of California at San Francisco	3. University of California at San Francisco
4. University of Colorado	4. New York University	4. New York University	4. University of Michigan	4. New York University
5. University of California at Los Angeles	5. University of Colorado	5. Yale University	5. University of Illinois	5. University of Pennsylvania
6. New York University	6. Wayne State University	6. Case Western Reserve	6. University of Colorado	6. University of Michigan
	7. University of California at Los Angeles	7. Boston University	7. University of Minnesota	7. University of Illinois
	8. Boston University	8. University of Colorado	8. University of Maryland	8. Wayne State University
	9. University of Maryland	9. Columbia University	9. New York University	9. Catholic University
	10. Catholic University	10. Cornell University	10. University of California at Los Angeles	10. Columbia University

Table 4Schools of Nursing Selected for Study Based on Previous Studies

Frequency of Appearance in the Studies	School of Nursing
5	New York University
5	University of California, San Francisco
5	University of Washington
4	Case Western Reserve
4	University of California, Los Angeles
4	University of Colorado
2	Boston University
2	Catholic University
2	University of Maryland
2	University of Michigan

Research Design

The research design used was an exploratory method utilizing naturalistic inquiry with a multimethod, multi-site approach. Descriptive methods were used in the initial phase prior to the on-site interviews followed by combined descriptive and ethnographic methods at the study sites. Selection of subjects and instruments utilized are discussed in the following sections.

Subjects

Nursing deans from the 10 identified academic institutions were provided with a set of criteria and asked to nominate three nursing researchers at their institutions who met the criteria for established nurse researchers. The deans were also asked to nominate two

alternates, should any one of the original three researchers be unavailable for the investigation. A sample of the nomination form has been included in Appendix A. Nominations were received from seven institutions, thus providing access. Access was denied in one institution and two institutions were categorized as non-respondents after follow-up attempts were made to solicit nominations. Selected characteristics of the participating study sites are included in Table 5. All four geographic regions in the United States were represented by the seven institutions as follows: North Atlantic (1), Midwest (1), Southern (1), and Western (4). Six of these institutions were organized as Schools of Nursing and one as a College of Nursing. Nurse researchers nominated for the study were then contacted by personal letter to explain the study and obtain informed consent. Follow-up personal phone calls were made to all participants to provide any additional information on the study, to explain materials sent to each researcher, and to arrange for on-site interviews.

Since the investigation focused on established nurse researchers in their environments, informed consent by the subjects was essential. A request for a expedited review was approved by the Institution Review Board at the University of Florida. A copy of the study consent form has been included in Appendix B. All research, however unobtrusive, may pose some degree of perceived threat of personal disclosure. Participants were assured that only aggregate information would be released and were given the opportunity to be involved in a review of the research findings prior to dissemination of the results. Separate

Table 5

Selected Characteristics of the Study Sites

Institution	Sponsorship	Carnegie Classification (1976) ⁺	Highest Degree Offered *	Member of AAU ⁺⁺
Catholic University	Private	Research University II	D	Yes
Univ. of California, Los Angeles	Public	Research University I	M **	Yes
Univ. of California, San Francisco	Public	Specialized Institution	D	No
Univ. of Colorado, Health Science Center	Public	Specialized Institution	D	Yes
Univ. of Maryland	Public	Research University I	D	Yes
Univ. of Michigan	Public	Research University I	D	Yes
Univ. of Washington	Public	Research University I	D	Yes

* M = Master's D = Doctorate

** Doctoral program approved and due to open Fall, 1987

⁺ Carnegie Classification (1976):

Research University I = included as one of the leading 50 universities in receipt of federal financial support for research and minimum number of doctorates awarded annually

Research University II = included as one of the leading 100 universities in receipt of federal financial support for research and minimum number of doctorates awarded annually

Specialized Institution = Medical center autonomous from the parent institution with classification as specialized in relation to the focus of the curriculum versus a liberal arts curricular focus

⁺⁺ American Association of Universities

express permission was requested from the study participants in order to audiotape interview sessions to facilitate accurate data collection.

Instruments

Waltz, Strickland, and Lenz (1984) have reported, "Because words and sentences are human artifacts, they provide rich and varied sources of data about the personalities, thoughts, attitudes, and preferences of the writers or speakers, as well as about the interpersonal, social, political, and cultural contexts in which they are or were involved" (p. 255). Data collection was accomplished using four instruments that represent a variety of qualitative and quantitative approaches. Use of multiple modes of inquiry have been supported by Fawcett (1984), Miles and Huberman (1984), Sweeney (1985), and others. The research questions with associated variable categories and study instruments is illustrated in Table 11. The Pre-Interview Profile along with the Perceptions of Successful Research instrument were sent to the established nurse researchers prior to on-site interviews. Responses from the participants were requested prior to the site visit. Along with original structured and semi-structured items, these initial responses received from the study participants were integrated in the On-Site Interview guide to offer opportunity for clarification, specification, and greater depth. Information for the Organizational Environment form was collected during or following the site visits from a representative selected by the respective Deans. Instruments have been included in Appendix C. Each instrument will be discussed individually in the following section.

Table 6

Research Questions with Associated Variable Categories and Instruments

Research Question	Variable Category [*]	Instrument ⁺
What antecedents and individual characteristics do established nurse researchers identify as contributing to and influencing successful research outcomes and other scholarly endeavors?	Personal Professional Positional Productivity Research Orientation	1 1, 3 1 1, 3 2
What environmental variable do established nurse researchers identify as being essential to the support and success of their research and the research process?	Positional Organizational Research Orientation	1 4 2, 3
How do established nurse researchers engage in linkage or network activities to influence the dissemination and utilization of research findings?	Network Research Orientation	1, 2, 3 2, 3

^{*} Refer to Table 1 for general classification of variables

- ⁺
- 1 = Pre-Interview Profile
 - 2 = PSR
 - 3 = On-Site Interview
 - 4 = Organizational Environment Form

Instrument Development

Pre-Interview Profile

The Pre-Interview Profile was designed as a preliminary step to an individual interview with study participants in order to obtain background data on personal, positional, professional, productivity, and research orientation variables on the three research questions. The relationship of these variable categories has been illustrated in Table 6. Data were requested on the personal variables of: chronological age, marital status, number of dependents, gender, race or ethnic origin, number of siblings and birth order, and place of birth. Information on professional variables was obtained through items on educational preparation, postdoctoral work completed, clinical specialty, career influences, career age, and work habits. Positional data were obtained through items on academic rank, tenure status, years at current location, mobility, position or title, primary job responsibility, job related activities and student to faculty ratios. Limited information was included on the organization with only the perception of the primary institutional mission requested. The number of journal subscriptions was requested as network data and influences on scholarship as research orientation data. A portion of this instrument contained a request for quantitative data on number of publications, papers, grants, awards, editorial boards, and off-site consultations in specified categories based on both a career total and the previous three years.

The Pre-Interview Profile was developed following identification of scholarly productivity indicators in the literature. General interviews were done with five nursing faculty members at one research university as an initial pilot and developmental step for the instrument. A revised form underwent further revisions following review by a panel of experts. Further testing of the instrument was done with three established nurse researchers at the same Research I University which will be discussed in a subsequent section.

Perceptions of Successful Research (PSR)

Campbell, Daft, and Hulin (1983) investigated antecedents and characteristics of significant and not-so-significant organizational research using a convenience sample of 29 scholars to obtain subjective recollections of the research process. The PSR instrument, adapted by Moody, Kearney, and Conlin (1987) with permission from the work of Campbell et al. (1983), was designed to identify antecedents and outcomes to successful research studies by nurse researchers. All three research questions were addressed with use of this instrument as illustrated in Table 6.

Respondents were asked to think back over past nursing research projects and identify one that they considered quite successful, in that it had made a significant contribution to nursing. The notion of a successful research project included all kinds of research, qualitative or quantitative. A requirement for selection was that the research should have been completed, written, and submitted for publication. Variables addressed with the instrument included

(1) efforts and results from the generation, dissemination, and utilization of the research (research orientation and characteristics of environments); (2) use of professional linkages (network); and (3) contribution of the research findings toward theory development and use in the discipline (research orientation). Part I of the PSR included structured and semi-structured items on the background and origin of the research project selected. Part II contained 30 questions in four series, on a five-point scale concerning the same one successful research project selected. Initial testing of Part II of the PSR was done in two separate administrations of the instrument. Forty-eight researchers, predominantly from the southern region, who were nurse faculty at research universities comprised the sample for the first test administration of 50 items. Items were eliminated and the instrument was reduced to 30 items based upon (1) respondents' comments indicating ambiguity, (2) high rates of non-response, and (3) low to zero correlations with other items with which they should have logically correlated. The second administration involved 57 nurse researcher respondents who were Fellows of the American Academy of Nursing from all geographic areas and not employed at sites selected for this study. Revisions to the instrument were based on analyses from both test administrations, considering individual and combined testing. A significant positive correlation was found between successful projects that were funded and when statistical significance was used as an indicator of valuable results. The highest mean scores for the items were found with questions addressing

methodological rigor. On the total sample of 105 respondents, the reliability indexes were as follows: $\alpha = .723$ and $\theta = .745$ ($p < .01$). Minor revisions were made following further statistical analysis.

Since it was determined that the instrument measured more than one single underlying factor and items were correlated, individual items of the PSR were used to characterize the subjects' responses, rather than providing total or subscale instrument scores. Themes with significant research identified in the original research by Campbell et al. (1983), methodological rigor, importance to the discipline, personal interest and motivation, and real world implications, were utilized in the analysis.

On-Site Interview Guide

The On-Site Interview Guide was developed as a qualitative data collection method using structured and semi-structured items and addressed all three research questions. The advantages of an interview guide include that it (1) provides for efficient time utilization, (2) is systematic and comprehensive by delimiting the issues, and (3) focuses the interview (Patton, 1980). The combination of both structured and semi-structured items is intended to allow for a degree of objectivity and uniformity, yet still allowing for probing and clarification (McMillan & Schumacher, 1984). Further specificity was added to the guides for on-site interviews with established nurse researchers based on initial data received on the Pre-Interview Profile and PSR instruments. Interview times ranges from one and three-quarter

hours to three and a quarter hours. Interviews were taped to allow for greater accuracy in recording. Data obtained addressed the following variables: personal (family influences and personal antecedents and characteristics needed for research); professional (postdoctoral study influences and career influences); positional (expectations for scholarly productivity); organizational (institutional missions, environmental facilitators and resources; perceived support; research requirements); network (communication with colleagues and mentorship); productivity (early publications and publication preferences); and research orientation (influences on scholarship, research habits, and methods for continued development). The instrument was tested in the pilot study, discussed in a following section.

Organizational Environment

The Organizational Environment form was designed to obtain general environmental, particularly organizational, influences for each of the academic sites. This instrument addressed the second research question, as indicated in Table 11, and organizational variables as follows: geographic location; institutional type, sponsorship and primary mission; school organization; program offerings and sizes; student to faculty ratios; a research requirement for faculty appointment, promotion, and tenure; support services, sponsored support and resources; and the availability and services of a research support unit.

The form was critiqued by a panel for relevancy, accuracy, and ease of data collection. Each of the Deans was asked to have the form

completed by a designated person during or immediately following the site visit.

Pilot study

In March, 1986, a pilot study was completed at a southeastern research university as a "rehearsal" for site visits and final critique of the study instruments. The pilot site was similar to the study sites as follows: (1) public sponsorship, (2) Carnegie Classification as Research University I, (3) Doctorate in Nursing as the highest degree program, and (4) Membership in American Association of Universities. Refer to Table 5 for comparison with the study sites. A purposeful sample of three nurse researchers who met the criteria for established nurse researchers was used to test data collection protocols with three instruments: (1) Pre-Interview Profile, (2) PSR, and (3) On-Site Interview Guide. Evaluation of data collection protocols and instruments occurred in a follow-up group interview with the three researchers, the dissertation committee chairperson, and the investigator. Several editorial revisions on the Pre-Interview Profile and the PSR were discussed. Suggestions for elimination of several items on the interview guide were followed. The Organizational Environment form was reviewed by an associate dean and an administrative assistant from the Office of the Dean for clarity and completion ability. The main concern raised on data collection was the length of time for the interview process. Data obtained were deemed appropriate to the intent of the instruments. Preliminary descriptive analysis revealed identifiable domains in the data.

Data Collection Protocol

Data collection for this exploratory study was organized into three stages. Data collection in stage one occurred between March and August, 1986. Visits to the seven sites were done between May 20, 1986 and July 15, 1986, for the second stage of data collection. Following lengthy analysis procedures for the data obtained in the first two stages, Stage Three of data collection occurred during January, 1987.

Stage One

The initial stage of data collection began with the nomination of and contact with established nurse researchers. Leading researchers were mailed a packet of materials containing (1) a personal letter to explain the study and request participation; (2) an informed consent form (Appendix B); (3) a schedule form requesting tentative times for the on-site interviews; (4) the Pre-Interview Profile; and (5) the PSR. This mailing was followed and/or preceded by telephone calls to the researchers to discuss the materials. If the researcher was willing to participate in the study, he/she was requested to return the signed consent and schedule forms and the two data collection instruments. Stage one consisted of both qualitative and quantitative data collection.

Stage Two

This stage consisted primarily of qualitative data collection during the site visits to the leading academic institutions. The On-site Interview Guide was used for individual interviews with the established nurse researchers. Interviews were conducted at a location

on-site selected by the respondents. Prior to the visit and while at the site, the Dean or her representative was contacted as a part of protocol and to gain access to the resource person who would be responsible for completion of the Organizational Environment form. Quantitative data were obtained with the Organizational Environment form for contextual information on the sites.

Stage Three

Stage three consisted of qualitative data collection and was less formalized for the respondents. Established nurse researchers were given the opportunity to respond to aggregate findings from the prior two stages of data collection. Participants were mailed a summary of the results obtained from the Pre-Interview Profile and the On-site Interview and asked for a written response by making any notations on the report, completing short answer questions on a reaction form, or using any other method they felt was appropriate.

Data Analysis Procedures

Several strategies were used for triangulation of the data. Data analysis procedures were organized into three major stages to dovetail with the stages of data collection.

Stage One

Analysis of data in the first stage focused on the two initial study instruments, the Pre-Interview Profile and the PSR. The Pre-Interview Profile was used to develop a descriptive profile of established nurse researchers prior to the On-Site Interview, when available. Personal, professional, positional, and network variables

were used for descriptive analysis. Data were categorized and coded to fit descriptive analysis procedures.

Productivity variables were analyzed for type and rate of scholarly activities of established nurse researchers using a method adapted from the work of Pranulis (1984). As described previously, four weighted measures of productivity were developed by Pranulis based on self-reports for a three year period: (1) publication productivity; (2) presentation productivity; (3) tangible products score; and (4) total productivity as the summation of the three other weighted scores. For this investigation, some adaptations were made to further consider the background of the established nurse researchers. Weighted scores were calculated with no distinction for single authored versus co-authored or multiple authored works in accordance with Ostmo's (1982, 1986) recommendation. The following formulas were used to calculate productivity rates for two time periods, the past three years and total career.

- (1) Partial Publication Productivity = total weighted score for the following items:

Books	4	x	n
Book chapters and monographs	1	x	n
Refereed journals	2	x	n
Non refereed journals	1	x	n

- (2) Paper Presentation Productivity = total weighted score for the following items:

International	2	x	n
National	2	x	n
Regional	1	x	n
All others	0.5	x	n

- (3) Funded Grant Productivity = total weighted score for the following grants received as a principal (PI) or or co-principal (Co-PI) investigator as follows:

Federal	3	x	n
National	2	x	n
Local sources (extramural)	1	x	n
University/college sources (intramural)	1	x	n

- (4) Total Scholarly Productivity = Summation of weighted scores for publications, paper presentations, and funded grants received as PI or Co-PI.

These weighted measures were further divided by career age to allow for greater comparison among respondents. Other forms of productivity reported by the researchers were used for descriptive purposes. These included: off-site consultations, service on editorial boards, and research awards and honors.

The PSR was analyzed in two ways. First, Part I of the instrument yielded responses to the critical incident (Polit & Hungler, 1983) or exemplar (Benner, 1985) of a successful research project. Data were transcribed, followed by a domain analysis of the responses. Second, the 30 Likert scale items in Part II were used for development of a total instrument score and descriptive statistics on the items. Medians were calculated for the ordinal data across all respondents. Spearman correlations were also calculated to consider association among items and against the four external criteria (publication of findings, presentation of findings, funding obtained, and predominant research approach used) for the project selected. Following this,

items were sorted into themes identified by Campbell et al. (1983). Themes and number of associated items were as follows: methodological rigor, five items (questions 1, 2, 3, 4, and 11); importance to the discipline, 14 items (questions 5, 6, 7, 10, and 21 through 30); personal interest and motivation, six items (questions 8, 9, 12, 13, 14, and 19); and real world implications, five items (questions 15, 16, 17, 18, and 20). Thematic analysis was then used to characterize responses to these items.

Review of responses on the Pre-Interview Profile and PSR were also used to individualize On-site Interview Guides and obtain clarification, if needed, during the second stage of data collection.

Stage Two

The On-site Interview Guide and Organizational Environment form contained the data for analysis in this stage. The interview process provided a volume of qualitative data for analysis at this stage. Verbatim responses from the interviews were transcribed and verified by the researcher in an effort to preserve the semantic coherence (Weber, 1985) for analysis. These responses were initially coded into domains in accordance with the topical areas covered prior to examination for processes and patterns in the data. Word processing equipment was used for transcription to assist with editing and organizing data. The ethnographic method of descriptive analysis was used with the data. Spradley (1979) has stated "the essential core of ethnography is the concern with meaning of actions and events to the people we seek to understand" (p. 5).

Data from the Organizational Environment form completed at the study sites were used to characterize environments of established nurse researchers through description of resources and support for research and scholarly activities. Data were coded into domains to describe variables of the context, in this case the school of nursing environment. Selected variables have been used earlier in this chapter to describe the environment, as noted in Table 5. This also permitted triangulation of the data with the opportunity for comparisons with the responses of the established nurse researchers related to environmental facilitators and resources.

Stage Three

Qualitative data were again the focus for analysis in the third stage. Sandelowski (1986) has discussed the need for quality checks on data with reference to the "credibility" of qualitative inquiry. In this stage, a quality check on the data was obtained through the subjective analysis of the established nurse researcher respondents to a preliminary aggregate report of findings. Kirk and Miller (1984) have described validity in quality research "as the degree to which the finding is interpreted in a correct way" (p. 20). Reactions of the respondents was used to assess the accuracy of interpretation of perceptions of established nurse researchers and fairness of representation in the various themes and domains which emerged from the data. Respondents were offered the opportunity to provide additional information, suggest changes in the report, and/or provide a "minority report." Established nurse researchers' reactions to the aggregate

report were compiled and compared with the findings obtained in the previous two stages of data analysis.

Summary

Development of the study and research methodology have been presented in this chapter. A naturalistic inquiry paradigm and an organizational systems substantive paradigm provided the basis for this exploratory study which used a combination of qualitative and quantitative research approaches. A broad range of variables classified as personal, professional, positional, network, organizational, productivity, and research orientation were examined and related to the three research questions.

Established nurse researchers and their environments were the units of analysis. The means for selection of leading academic environments and nomination of researchers from these institutions were discussed. The study instruments were reviewed for development, preliminary testing, use in data collection, and analysis procedures. The following chapter will present the findings from the investigation.

CHAPTER IV FINDINGS

In this chapter, the research findings are presented. First, findings related to individual and environmental characteristics are presented by the variables previously specified in Table 6. Following this, textual data that exemplify successful research outcomes by Established Nurse Researchers will be illustrated. Finally, validation of the study findings will be discussed.

The ethnographic method for qualitative data analysis was used for identification of domains and themes. Findings are presented following descriptive and ethnographic analysis. Domains were developed as categories apparent in the verbal and written comments provided by a majority of the respondents. When domains could be further unified under a broader principle, themes emerged from the data. Spradley (1979) has described such themes as "larger units of thought" (p. 186). Themes were developed based on recurrent ideas apparent in domains to exhibit broader principles related to the respondents' descriptions on a selected topic. Presentation of the findings has been organized by variables of interest as illustrated in Table 7. Data from the Pre-Interview Profile, On-site Interview, and Organizational Environment Form have been presented to triangulate the data from the Established Nurse Researchers under individual and environmental characteristics. The Perceptions of Successful Research instrument

Table 7

Organizational Scheme for Presentation of Findings, by Variables and Instruments

Variables	Instruments			
	Pre-interview Profile	On-site Interview	Organizational Environment	PSR
Personal	Demographic characteristics Family influences	Family influences Antecedents and characteristics		
Professional	Education Postdoctoral work Clinical specialty Career age Work habits Career influences	Postdoctoral work Career influences		
Positional	Rank and tenure Mobility Position/titles Job responsibility Job-related activities Student-faculty ratio	Expectations for scholarly productivity		
Productivity	Weighted measures of productivity	Early publications Publication habits		Perceptions of research success
Network	Journal subscriptions Professional societies	Communication with colleagues Mentorship		Communication with colleagues
Research Orientation	Influences on scholarship	Influences on scholarship Research habits Research preferences Methods for continued development		Research habits Contributions to nursing
Organiza- tional	Primary mission	Institutional missions Support for research Environmental characteristics	Geographic location Institutional type/sponsorship Primary mission Environmental characteristics Research requirements Support for research	Environmental characteristics

(PSR) provided both qualitative and quantitative data related to organizational, network, productivity, and research orientation variables and has been presented under a separate section of this chapter.

Response rates for the four study instruments were as follows: Pre-Interview Profile, 95.24 percent (n=20) with supplemental information on the missing response obtained during the on-site interview and through biographical data; PSR, 95.25 percent (n=20); Organizational Environment Form, 85.71 percent (n=6 schools of nursing); and On-Site Interviews on the 21 Established Nurse Researcher respondents.

Individual Characteristics

Personal Variables

Personal variables of interest included chronological age, gender, marital status, current number of dependents, race or ethnic origin, place of birth, and family background with data obtained through the use of the Pre-Interview Profile. In addition, family influences and individual antecedents for the researcher were obtained during the On-Site Interview.

Demographic variables

Demographic data from the sample of established nurse researchers were obtained through study instruments used to address the personal variables identified in the study design, as illustrated in Table 8. The study participants' chronological ages ranged from 34 to 56 years, with a mean age of 44.67 years. The respondents consisted of 20 females and one male. The majority of the respondents were married (61.90%)

Table 8

Demographic Characteristics of Established Nurse Researcher Sample

	n	%	Mean
Chronological Age (range 34-56 years)	21	--	44.67 (s=6.05)
Gender	(21)		
Female	20	95.24	
Male	1	4.76	
Race/Ethnic Origin			
White	21	100.00	
Current Marital Status			
Single	7	33.33	
Married	13	61.90	
Divorced	1	4.76	
Current Number of Dependents	(20)		0.80 (s=0.95)
0	10	50.00	
1	5	25.00	
2	4	20.00	
3	1	5.00	
Place of Birth (Geographic Region)	(21)		
North Atlantic	5	23.81	
Midwest	9	42.86	
Southern	1	4.76	
Western	4	19.05	
Other Countries	2	9.52	
Place of Practice (Geographic Region) *	(21)		
North Atlantic	3	14.29	
Midwest	3	14.29	
Southern	3	14.29	
Western	12	57.14	

* Location of current position in academia

with 50 percent indicating no current dependents. Seventeen states, the District of Columbia, and two foreign countries were represented through the respondents' places of birth.

Family influences

Families of orientation. Family background variables are displayed in Tables 9 and 10 for the participant's families of orientation (origin). Parental occupations varied with 20 percent of the fathers and 30 percent of the mothers having some formal college education. Fifty-two percent of the respondents were only (14.29%) or firstborn (38.10%) children with a mean of 1.95 siblings for the group.

The On-Site Interview allowed for further discussion of family influences. Respondents described influences from their respective families of procreation and/or orientation. Influences were reported in 90.48 percent of cases for either nursing and/or academics and research. Approximately one-third of the respondents described how educational attainment was stressed by their parents. One factor to take into account with parental educational levels was the context, whether due to family crisis or the Depression, which was described as affecting parental lives and interfering with life plans. Positive childhood influences reported by the respondents included encouragement of mental curiosity, creativity and asking questions, dinnertime family discussions, and reading. Negative influences were rarely reported but included parental concern for stable employment, a focus on marriage and family life for some daughters, and lack of socialization to higher

Table 9

Occupational and Educational Background of Parents of Established Nurse Researchers

	Father		Mother	
	n	%	n	%
Occupations	(20)	(100)	(20)	(100)
Nurse	0	0	2	10
Physician	0	0	1	5
Businessman/Businesswoman	6	30	2	10
Lawyer	1	5	0	0
Teacher/School Administrator	1	5	3	15
Homemaker (as sole occupation)	0	0	9	45
Worker, skilled	8	40	3	15
Worker, semi-skilled	4	20	0	0
Highest Educational Level	(20)	(100)	(20)	(100)
Grammar School or Less	6	30	3	15
Some High School	5	25	5	25
High School Diploma	4	20	3	15
Vocational-Technical Training	1	5	3	15
Some College	2	10	2	10
Undergraduate Degree	0	0	2	10
Some Graduate School	0	0	1	5
Master's Degree	0	0	0	0
Doctoral Degree	2	10	1	5

Table 10

Sibling Influences for Established Nurse Researchers

	N	%
Total Number of Siblings	(21)	(100)
none	3	14.29
1	10	46.12
2	0	0.00
3	2	9.52
4	5	23.81
5	1	4.76
Placement in Birth Order	(21)	(100)
Only Child	3	14.29
Oldest Child, not only *	8	38.10
Second Child	8	38.10
Third Child	1	4.76
Fourth Child	1	4.76

* Oldest child includes all respondents who have siblings and were firstborn. In the case of twins, both twins have been counted as first born despite time of delivery.

education. Interestingly, three of the respondents (14.29%) reported that the idea of a college or university education was taken for granted while an equal number reported that such education was not viewed as an option in their family of orientation's context. Nonparental family of orientation influences related to childhood education, extended family members, and attitudes in the community where the individual was reared.

Those respondents who were not firstborn or only children described interesting perceptions of sibling influences. One respondent reported that she had been influenced by educational attainments of her three older brothers. Others described role reversals with one second-born taking on the role and duties of the elder sister and two other second-born respondents described how their elder brothers compared accomplishments to those of their respective younger sisters. Another second-born respondent described how she had been "challenged" to achieve and stated, "[not having] the perfect start, it frees you up in a lot of ways."

Families of procreation. Families of procreation were also perceived as supportive to research and nursing careers. Spousal support was described by all non-single respondents for current or past marriages in three domains, educational accomplishments, home responsibilities, and research activities. In the domain of educational accomplishments, respondents' descriptions included actual encouragement by the spouse for advanced education and support during that past process. Home responsibilities ranged from helping with household tasks or child rearing, to support for a two-income family, to taking a major role in this area when the respondent was heavily involved in a project. The domain of research activities included activities of the spouse which promoted research whether through encouragement and understanding of the time demands for projects, demonstrating the norms of research and scholarly productivity or assisting with priority setting, developing equipment for the

respondent's research project or providing technical advice, or providing an environment conducive to the respondent's research and scholarly activities. As an indicator of the responses in these three domains for spousal support, respondents' descriptions were classified as follows: educational accomplishments 35.71 percent, home responsibilities 57.14 percent, and research activities 64.29 percent, based on the 14 respondents in this subgroup for their families of procreation.

In the families of procreation, influences from the respondents' children were less apparent. Respondents did characterize their children as supportive during graduate educational programs and for working parents and as researchers. No negative influences from children were reported but variations in interest and understanding of these children were related to the child's developmental level. One single respondent did state, "for most of my life I have not had the family encumbrances that [could] have deterred me from giving a full amount of energy to my career, to my work."

Perceived antecedents and essential characteristics for a successful researcher

Another area covered during the On-Site Interview focused on the respondents' perceptions of individual characteristics related to success as nurse researchers. Respondents were asked to describe valuable attributes which the person must bring as antecedents for research and scholarship. Following this, they were asked what they perceived were the most essential characteristics for the nurse

Table 11Antecedents and Characteristics for the Successful Nurse Researcher,
Reported by Established Nurse Researchers

Theme	Antecedents and Essential Characteristics
Character Traits	Commitment and Motivation Perseverance Interest Creativity Independence Ethics
Knowledge	Knowledge Base Opportunities for Learning "Humility" and Seeking Help
Skills	Mental Abilities Collegiality Organizational Skills Articulation Skills

researcher or scholar, especially related to ongoing research. These questions yielded similar character traits, knowledge, and skills as illustrated in Table 11.

Antecedents. Character traits was the first theme of antecedents for the nurse researcher. This theme commanded the heaviest emphasis in the comments of the respondents and included the domains of interest, commitment, perseverance, creativity, independence, and ethics. First, there must be an interest in "asking questions", in "finding answers and searching for truth", "in solving the need-to-know kinds of problems", and in knowledge. The domain of interest included

the curiosity, the wonder, and the "sense of fun" for research. This interest led to the second domain, commitment.

Commitment included motivation, "drive", or the willingness to put the time into research and accept delayed gratification of personal desires. Respondents described this antecedent as the "tolerance for a lot of hard work" to the point that the individual "can't imagine life without research." This commitment sustains the interest in research and leads to the third domain, perseverance.

Approximately 62 percent of the respondents described a sense of perseverance needed by the researcher which included endurance, stress management, persistence, patience, tenacity, and the ability of not becoming discouraged by problems that arise or failures during any stage of the research process. Respondents described this as a "tirelessness in the idea" and the sense of priority so that "[the research] gets done in spite of what else gets done or in addition to what else gets done." But, needed for perseverance, commitment, and a sustained interest is the antecedent of creativity as described by the respondents. Creativity included the inherent value of the research as well as being imaginative and being a "visionary" to "project beyond in time." One respondent described this as the "ability to rise above the morass of details and have a larger vision."

The last two domains of the character traits theme were independence and ethics. The fifth domain was one of independence with reference to development of the idea, functioning during the research process, and being able to make decisions and taking responsibility for

the research project. Independence further included courageousness and bravery for one's own convictions and taking risks as needed and as appropriate during the process. This was described as being a "self generator" or a "self starter." The final domain as an antecedent for the researcher related to ethics. This ethical domain was described as a "sense of honor" with the need for maintaining scientific integrity and the quality of a research project.

The second theme of antecedents for the researcher focused on knowledge. The knowledge base of the individual was the major domain of this theme. This knowledge base included a solid background in both methodological and substantive areas for conduct of the research. One respondent described this antecedent as a grounding in the knowledge base and continued updating of knowledge. This domain of knowledge logically leads to the next domain, opportunities for learning. Learning new ways of doing things and continued development of knowledge and skills, or perhaps the appreciation for these, was viewed as an antecedent thus leading to the need of a "sense of humility." This sense of humility included the ability to recognize and admit weaknesses and problems and to seek counsel and help from others who can augment the knowledge base of the individual.

Cognitive, affective, and psychomotor skills was the third theme of antecedents for the researcher. Vital for the researcher are the mental abilities, especially related to logical and analytical thought so necessary for research activities. One respondent described the antecedent as having the "intellectual, conceptual, and analytic

skills." As other respondents described, this included clarity in thinking with the ability to identify relationships, "the intellectual ability to use the tools", "work[ing] with higher order abstractions", and thinking about both divergent and convergent situations. The second skills domain related to interpersonal skills in collaborative relationships and the ability to get along with and work with other people. Organizational skills were proposed as an antecedent by some of the respondents and included concern for detail and process and discipline for devotion of time to the research. The fourth skills domain related to communication. Articulation skills, both speaking and writing, were viewed by a minority of the respondents as an antecedent with some proposing these as more of an essential characteristic rather than as an antecedent for the individual.

Essential characteristics. Similarly, essential characteristics for successful research also fell into the three themes of character traits, knowledge, and skills and the domains illustrated in Table 11. The main differences between antecedents and characteristics apparent in the respondents' comments were that of degree or depth.

In the domain of character traits, interest was necessary but became an enthusiastic devotion to nursing research. As one respondent stated, it is "the curiosity, desire, motivation to learn new methods or to extend the knowledge base." This depth of enthusiasm was further illustrated by a respondent who described research as "a passion for the substance of what you're studying" and a "real love for what you are doing." This value for research continued to be apparent in other respondents comments with an added dimension of the realization of the

importance of the topic. One respondent described this importance as individuals "research[ing] things they really value, not just to research things that they think are researchable" in order to maintain the interest throughout the career. Again, this leads to commitment; commitment of the researcher to a research program.

Perseverance was described but with reference to the research problem. One respondent described this as researchers who "just won't rest until [they] find out something." These researchers face "difficult problems" as part of the research but this perseverance allows them to "deal with them." One respondent illustrated this perseverance as "the ability to engage in something to the point that you forget what time it is and can't remember if you had lunch or not." In the case of essential characteristics, perseverance is the "ability to stick to long range goals." The "work ethic" was described with reference to long range goals in the research career of the individual researcher. Part of perseverance is a "sense of hope." One respondent described what she called the need for "positive skepticism" as an essential characteristic of the successful researcher. This positive skepticism was described as "a certain amount of hope for your study to pay off." So, part of the commitment becomes a belief in the research as an essential characteristic. This belief or commitment helps the individual to feel that there is "no problem that can't be solved" and of "[not letting] things defeat you."

Creativity was described as an essential characteristic with a curiosity and "envision[ing] what the consequences are to nursing science." Creativity continues to be goal oriented for the research

program in the respondent's descriptions, whether leading to the next study, "social change", or the realization that the research is "something great." Independence was again apparent through risk taking and courageousness but with the added dimension of and need for peer review. An ethical domain was also apparent with essential characteristics in terms of maintaining the integrity of the data for the outcome of the research.

The knowledge theme continues to be apparent with essential characteristics for the nurse researcher. The background and knowledge base continued to be reported as essential for the nurse researcher but with the added dimensions of "keeping up with the substantive area" and having resources to add to the individual researcher's knowledge base. Opportunities for learning changed focus to learning from difficulties during the research process. One respondent described the need to:

be open to all sorts of results in terms of the study,
results to confirm and disconfirm the hypotheses and
be willing to be led by the extraneous. . . It's
the mistakes you learn from; the surprise findings.

Another respondent stated that the "greatest learning is on the job and [that] you keep learning." Intellectual honesty or humility was described as the need for consultation and collaboration. Peer review was an important aspect of knowledge in accepting and being open to criticism.

In the skills theme, mental abilities was the predominant domain. The continuation of the antecedents in this theme was present in the comments of the respondents. Respondents described the need for having a "research mind" and the ability to move back and forth between the

theoretical and the empirical. Interpersonal skills with colleagues were not only for collaborative relationships, but also for support, reinforcement, consultation, and coordination of resources with the assumption of a leadership role on the research project. A greater number of respondents also reported articulation skills as essential for conducting successful research. These communication skills were for dissemination of results as well as to "convince others to believe" in the project in order to obtain resources and grants. Organizational skills were also needed for successful research for the creation of efficient and effective research habits. As an example of organizational skills, one respondent described the ability "to organize a flow or pattern of work that will work for you, [the researcher]." A part of organizational skills similar to the antecedents, is time management in order to "keep certain blocks of time that don't get encroached on by other things."

Professional Variables

Professional variables included educational preparation, post-doctoral work, clinical specialty, number of hours worked per week, percentage of time worked alone, career age, and career influences. Educational preparation and clinical specialty areas are illustrated in Table 12. The mean ages of the respondents' degrees were as follows: Baccalaureate 20.70 years, Master's Degree 15.68 years, and Doctorate 9.90 years, with standard deviations of 4.81, 4.10, and 5.22 respectively. Degrees held in nursing included 95.24 percent Baccalaureate, 90.48 percent Master's, and 33.33 percent Doctoral.

Table 12

Educational Preparation and Clinical Specialty Areas

	n	%
Baccalaureate		
Nursing	20	95.24
Non-Nursing	1	4.76
Master's **		
Nursing	19	90.78
Non-Nursing	2	9.52
Doctorate		
Nursing		
DNSc	3	14.29
Ph.D.	4	19.05
Education		
Ed.D.	1	4.76
Ph.D.	3	14.29
Natural Sciences	3	14.29
Psychology	1	4.76
Sociology	4	19.05
Others	2	9.52
Postdoctoral Work		
Formal Programs +	3	14.29
Self-Selected Studies	7	33.33
No Work Reported	11	52.38
Clinical Specialty Areas		
Adult Health	6	30.00
Community/Family Health	2	10.00
Gerontology/Aging	4	20.00
Mental Health	3	15.00
Parent-Child Health/Maternal-Infant	3	15.00
Women's Health	1	5.00
Others	1	5.00

*Double Major reported by two respondents, only nursing reported here.

**Two degrees reported at this level by three respondents, only one nursing degree is reported in the above figures.

+ Formal postdoctoral studies varied in duration. Additional self-selected studies are not reflected in other postdoctoral figures when formal postdoctoral programs of study were reported.

Three of the respondents (14.29%) had done formal, funded postdoctoral work. In addition, 33.33 percent have done self-selected course work and short programs while 52.38 percent of all reported no formalized postdoctoral study. The respondents represent a variety of clinical specialty areas. The mean number of hours worked per week for the group was 59.65 hours ($s=10.02$) with a mean of 45.08 percent of time ($s=24.46$) worked alone. Career age, reported by the participants as the number of years of full-time academic appointments in a college or university setting, ranged from 6.5 to 22 years with a mean of 12.80 years ($s=5.10$) and a median of 11.50 years.

Postdoctoral study

During the On-Site Interview, respondents discussed postdoctoral education for nursing and were asked to rank the value on a scale with one being the lowest and 10 the highest. The mean value ranking was 8.62 ($n=21$, $s=1.92$) with a median of 9.00 and a range from 2 to 10. Some of these value scores were qualified by the respondents based on motivation and skill of the individual, individual career goals, academic environment and resources without postdoctoral studies, and the strength of doctoral preparation of the individual scholar.

The opportunity for formalized postdoctoral studies were generally perceived as positive experiences by the respondents. One respondent stated: "the postdoc is a time out for the scholar to gather herself together and to move . . . into starting up her research program or revitalizing one that has dwindled over the years." The main theme of the comments was one of opportunity, an opportunity to broaden or

practice skills, to solidify research interests, to be relieved of workload responsibilities that may detract from research, to gain experience, or to work with a mentor or an expert in the field. Approximately 38 percent of the respondents described a positive effect of the postdoctorate in the application for and receipt of research grants. It was frequently noted that following completion of the doctorate, the individual is not prepared as an "accomplished researcher" or a "finished product." One respondent described the postdoctorate in preparation of the researcher as compared with basic nursing education: "I have come to believe that basically you prepare the beginning scholar just the same way you prepare the practitioner at the baccalaureate level . . . They are a beginning investigator and need to refine their skills." Another respondent stated: "I think the real advantage . . . in doing postdoctoral studies will be going from the dissertation to having another piece of research underway, proposed, and funded before you go into the first faculty position." The major benefits of postdoctoral studies were described for novice researchers yet the postdoctorate was also viewed as an opportunity to "gain experience in another methodology" or in another area of research interest. In fact, approximately 29 percent of the Established Nurse Researcher respondents reported the desire to do a postdoctorate in the future.

These comments on postdoctoral studies have been the "ideal" as perceived by the respondents. Additional selected quotations are included in Table 13. Limitations were also apparent in their comments

and are illustrated in Table 14. The economics of the current situation with a limited number of well funded postdoctorates available was one commonly described limitation. The view of nursing as a young "independent academic discipline" was cited by several of the respondents compared with the norm for formalized postdoctoral studies in other fields or disciplines. Several respondents did indicate that nursing would be moving in this direction in the future.

Career influences

On the Pre-Interview Profile, Established Nurse Researchers were asked who or what has influenced their professional nursing career and their success in research. Career influences reported fell into four areas, family, educational, work, and personal, with some respondents citing multiple influences. Family influences were reported by 25 percent of the respondents and included parental influences, childhood experiences, and spousal influences. Educational influences with role models, mentors, and faculty were reported by 35 percent of the respondents. Work influences related to peers, colleagues, the environment, and the work of others as cited by 40 percent of the respondents. In addition, some respondents (20%) cited personal influences such as a work ethic, commitment, desire to teach or do research, enjoyment of learning, and a personal quest for knowledge.

The On-Site Interview allowed for further elaboration of career influences. Career influences reported on the Pre-Interview Profile were supported by respondents in comments during the interviews.

Table 13Advantages of Postdoctoral StudiesSelected Comments

"A way of putting together your skills and interests with those of a mentor."

"To move self into a school setting where your primary purpose is research."

"It's very difficult getting grants with no track record."

"Critical to success in an academic setting where first of all promotion is based primarily on research programs and secondly . . . there are not mentors."

"Allows you to broaden your research skills and to practice them."

"To continue your dissertation research or to work with someone in that area because a lot of programs don't have someone that is in your area."

"Other fields with which nursing interacts are seeing the postdoc as essential."

"A great opportunity to expand and extend as well as pick up the clinical skills."

"A chance of getting your feet firmly and solidly planted in your chosen field or research and you get a head start."

"Clarify, reconfirm, and expand . . . knowledge base . . . and align yourself with a department that is very productive and scholarly."

"Helps to really solidify socialization that the doctoral preparation starts."

"It gives you more time to test ideas . . . and enables you to learn additional techniques, skills, ways of thinking."

"To find out what you want to research and what there is to research."

"Provides more in-depth experience in research."

"Beginning investigators need to refine their skills, work under the supervision of more experienced investigators, and learn to manage their careers wisely."

"A chance . . . of getting some research beyond the dissertation and probably most important is getting some resources to help you go further."

"To help you look at whatever you're interested in from different perspectives."

Table 14Limitations to Postdoctoral Education in NursingLimitations

Economics	Limited salaries Postdoctorates viewed as "a Luxury" Limitations in good funding programs
Mentors	Limited mentors available
History	Nursing as a young profession, academically Nursing is not yet at that point of requiring postdoctoral education "Bilingual" nature of nurse doctorates who have been prepared in other disciplines
Demand for Nurse Doctorates	Need for doctoral prepared people in faculty and administrative positions
Roles	Administrative roles as interfering with research
Mobility	Matter of accessibility Limitations in mobility related to spouse

Respondents' descriptions were classified into three domains, human, contextual, and personality factors. Human career influences were referred to by 80.95 percent of the respondents and included family members and relatives, patients, teachers, mentors, clinical colleagues, faculty colleagues, and deans. One-third of the respondents characterized contextual career influences which related to circumstances in education, practice, and society. Personality factors accounted for 38.10 percent of descriptions presented including early job satisfaction, career choices, creativity, determination, independence, control, and responsibility.

Table 15Positional Variables for Established Nurse Researchers

	n	%
Academic Rank	(20)	(100)
Professor	8	40.00
Associate Professor	8	40.00
Assistant Professor	4	20.00
Tenure Status	(20)	(100)
Tenured	15	75.00
Non-tenured, in Tenure Track	3	15.00
Non-tenured, not in Track	2	10.00
Additional Job Titles	(21)	(100)
None	5	23.81
Administrative Positions	9	42.86
Joint Appointments		
Clinical	3	14.29
Research	2	9.52
Instruction and Research	2	9.52
Principal Investigator on Program Grant	1	4.76

* Reflects an additional adjunct position in addition to the administrative position held by one respondent.

Positional Variables

Positional variables of interest included academic rank, tenure status, position (title), program assignment, primary responsibilities, job-related activities, student-faculty ratios, years at current location, and expectations for scholarly productivity. Positional variables of academic rank, tenure status, and additional job titles are reported in Table 15 with 75 percent of the respondents holding tenured faculty positions at the ranks of professor (40%) or associate

Table 16

Program Assignment and Primary Contractual Responsibilities, Reported in Percentages

	n	Range	Mean	Standard Deviation	Median
Program Assignment *					
		%	%		%
Baccalaureate	19	(0- 60)	5.42	15.33	0
Master's	19	(0-100)	44.05	38.10	40
Doctoral	19	(0-100)	30.26	35.53	20
Other	19	(0-100)	35.45	35.45	0
Primary Responsibilities **					
Teaching	16	(0-100)	46.25	25.53	45
Administration	17	(0-100)	23.83	26.90	10
Research	15	(0- 55)	26.33	16.95	25
Practice	17	(0- 20)	2.65	5.34	0

* Assignments to specific programs in the School of Nursing reported as percentages

** Official contract responsibilities reported as percentages

professor (40%). Program assignment was reported as a percentage with 35 percent of the respondents involved in teaching in one program in the school, 35 percent in two programs, and 30 percent involved in three programs. The majority of the respondents (75%) were involved solely in graduate nursing education at the master's (75%) or doctoral (65%) levels. Primary responsibility in research as reflected in the faculty contract ranged from zero to 55 percent with a mean percentage of 26.33 (s=16.95) as indicated in Table 16.

Table 17Weekly Averages of Job-Related Activities Reported in Hours

Activity	n	Mean	Standard Deviation	Median
Teaching	18	4.50	2.46	4.00
Classroom Preparation	18	5.81	3.85	5.25
Counseling Students	18	3.50	2.55	3.50
Clinical Supervision	19	0.82	1.82	0.00
Clinical Preparation	19	0.11	0.46	0.00
Grading Papers	18	2.36	2.16	2.00
Thesis Committees				
Member	18	1.14	1.11	1.00
Chair	18	2.08	2.51	1.50
Dissertation Committees *				
Member	14	1.82	1.90	1.00
Chair	14	1.82	1.81	2.00
Meetings	19	4.95	3.33	4.00
Clinical Practice	18	1.50	3.54	0.00
Research Activities	17	9.29	6.07	7.00
Research Consultation	18	2.00	2.35	1.50
Writing (grants/publications)	17	6.82	4.13	5.00
Community Service	19	2.26	2.47	2.00

* Percentages based on the respondents from the six sites with operational doctoral programs in the School of Nursing

Weekly hour averages of job-related activities are reported in Table 17. Research activities, including writing for publications and grants and consultation on research, accounted for a mean weekly average of 19.50 hours ($n=18$, $s=9.38$) and a median of 16 hours. When mean hours worked per week (59.65) for the group are considered, research activities account for approximately one third of their time. This does not take into account activities peripheral to research, like service on dissertation or thesis committees, advising students, teaching activities where research may be the focus, or dissemination activities external to the job-related activities reported. In addition, 19.50 hours weekly average is also above the mean of 26.33 percent as reported above in the faculty contract for primary responsibility in research.

Although few of the respondents are involved in undergraduate or clinical teaching, teaching activities do comprise a major portion of their faculty role. Traditional teaching activities including classroom preparation and presentation, clinical preparation and supervision, grading papers, and service on dissertation and thesis committees accounted for a mean weekly average for the group of 23.44 hours ($n=18$, $s=9.03$) and a median of 26.5 hours. When a 40 hour work week is considered, although this is well below the mean hours worked per week for the group, teaching accounts for greater than half of the contract time with the mean contract responsibility for teaching for the group of 46.25 percent ($n=16$, $s=25.53$). This indicates a major role of the group in teaching activities. As one respondent stated during the interview:

It's not that I don't do as much in terms of teaching. In fact, in terms of this last June graduation, I had the most doctoral students graduating and the most master's students graduating plus I do a lot of research. So I don't know whether it's just my view that you can accomplish whatever it is you're interested in accomplishing and that where those other people might look upon the same kind of amount of work that I do as a lot . . . Because I want to do everything!

Student-faculty ratios reported by the respondents yielded a mean of 9.29 ($n=12$, $s=2.72$) and a median of 8 students per faculty member. At the institutional level, variable but congruent student-faculty ratios were reported by representatives of the administrative offices of the schools of nursing.

Length of time at the respective institutions and career mobility were also of interest as positional variables. These respondents have been located at their respective institutions for a mean of 8.55 years ($n=20$, $s=4.99$) and a median of 8 years. Related to mobility, respondents reported the a number of career moves with a range of none to 6, mean of 2.05 and a median 2.00. Two of the respondents reported their career moves as related to changes in their husbands' place of work.

Expectations for scholarly productivity

Personal expectations. As part of their academic position, research was an expectation. Respondents were asked to describe their personal expectations for research and scholarly productivity. The overriding theme of these descriptions related to the development and continuation of programs of research. Research activities were described as focused in their area of interest and, in some cases,

accompanied by additional "peripheral" research conducted concurrently with studies related to the research program. Under this main theme of programs of research, three domains emerged, inner motivation, preferences, and productivity.

Inner motivation related to perceptions of enjoyment, satisfaction, involvement, concern for quality, and making a contribution. Motivation for the research was reinforced by internal as well as external factors. For example, respondents reported involvement in research to please oneself or to "feel productive." As one respondent stated, "it's like doing your personal best and then [doing a little more]." Several respondents focused on the quality of the output rather than quantity. One respondent stated, "I'll try to do good quality work and if it's rewarding, fine, if it's not, I'm not going to sit and worry about it." The desire to make a contribution was also included in this domain of inner motivation. One respondent described the contribution related to theory development as "mak[ing] a significant contribution to science by testing out and validating some theory." Another respondent related the contribution to motivation when she stated, "if I didn't think it was important, I would have trouble doing it." Thus, intrinsic motivation is derived in part from the desire to make a "meaningful contribution."

The second domain of personal expectations under the theme of programs of research contained preferences for clinical relevance, ongoing research activities, and involvement in multiple projects. Several respondents described a goal for increased clinical relevance

of studies as their program of research continued. Clinical relevance was a function of the developmental stage of the research and, when relationships were supported, a change in research focus to intervention studies. This process of moving from theory to clinical relevance was described as follows:

I'm seeing at this point in my own research development that it's really important to take on the challenge of research that is more clinically relevant I don't think we need a lot of more studies that simply darken the arrows in the model.

The ongoing activity required of the researcher with a program of research was described by several respondents. One respondent stated:

I think the other thing [research] requires is . . . that it's active enough in your mind and your activities so that you don't ever put it aside. That it's sort of central and occupies your time, your mind, and your spirit . . .

Further, research activity was such that respondents described other projects occurring concurrently with research program studies. These were described as minor projects, hobbies, and peripheral projects. As described by the respondents, these additional projects became more prevalent as the individual became more established in their research career. Involvement in multiple projects will be further illustrated under research orientation and research habits of the respondents.

The third domain of personal expectations concerned productivity discussed by the respondents. Productivity was described in terms of publications, presentations, and application for and receipt of grants. All respondents were committed to the dissemination of research findings as a personal expectation. Differences relative to

dissemination were mainly of focus. One respondent described her personal expectation for dissemination "not as notches on your CV or notches on your gun belt" but rather as by-products of the research and "going as far as you can with [the research]." Another respondent described such continual research activity as providing no time for personal expectations but rather just a part of the entire process. Publication was described as the major forum for dissemination followed by presentations to professional groups. The personal commitment to the research program continued to be evident in the respondents' comments. Funding related to generation of the research, however, productivity was described more in relation to the application for grants rather than restricted to the receipt of funds. Dissemination of results following completion of funded research was described as an obligation for the sharing of knowledge.

Environmental expectations. Respondents further discussed expectations at their institutions, of their academic colleagues, and the profession in general. Expectations of the institution were similar to those of the established nurse researchers with respondents describing the main expectation for research related to receipt of funding and dissemination of the findings. Several respondents described junior faculty positions that they had held previously where they were involved in research and publication while being socialized into the faculty role, in accordance with the expectations of the institution. Funding was viewed as an institutional value related to "paying your own way", giving visibility to the university, and

providing the dimension of peer review in terms of the importance and acceptance for the research as demonstrated by one's discipline. Rank-related expectations were also described at the institutional level with similar expectations but differences in scope of influence for funding and dissemination as the individual moves up the academic ranks. As with the personal expectations of the respondents, quality was also reported as a consideration at the university level. Quality concerned the research, the sources for dissemination of the findings, and the importance to the discipline. One respondent described tenure considerations where "there isn't a strong or firm criteria in terms of quantity but everyone asks, 'Is this advancing science?', 'Is this good research?', 'Is it well done, thoughtfully done?', 'Is it really extending current knowledge?'" Respondents from three of the seven institutions reported unclear or undefined university criteria with respect to quality and quantity of publications and the fact that these may vary for academic disciplines in the university setting.

There were no major areas of dissonance between the expectations of the respondents and their respective institutions. Most respondents described the expectations as "consistent", "similar", or "very similar." One respondent stated, "what I expect of myself always has to be primary, more than what the institution expects of me. If I meet my own expectations, then the institution has got to be satisfied." Differences described were in terms of proportion, emphasis, or inclusion of specific activities. Some respondents wanted teaching, clinical practice, or service to have added emphasis at the

institutional level but without any decrease in research expectations. Other respondents described specific values which they thought should have greater emphasis, for example, demonstration of accountability after tenure, decreased focus on the profoundness or uniqueness of contributions, service on national committees, and the extended time frame required for clinical research.

Respondents perceived the expectations of their academic colleagues as similar to those used in the institution for promotion and tenure. Generally, to remain in the setting, shared values for research, funding, and dissemination of findings were present and were sometimes referred to as "survival skills." In addition, expectations for collaboration on projects with faculty peers and students, in-house consultation, and continuance of teaching responsibilities were perceived to be collegial expectations. One respondent described this as "continu[ing] to be productive and pull[ing] your own weight."

In terms of expectations of the nursing profession, there was less agreement among the respondents. Generally, the respondents perceived that there were lower expectations held in the profession in general than those held in academe with the exception of scholarly subgroups like the American Nurses' Association Council of Nurse Researchers, the American Academy of Nursing, and Sigma Theta Tau. Some respondents reported no expectations held by the profession in general and that the profession does not encourage nurses' involvement in research. Another respondent stated that "the majority of nurses do not understand the need for research." Some descriptions from respondents related to the

status accorded the nursing profession. Other respondents reported that "in nursing in general, it's a battle to stay a profession" and that "the profession as a whole [does not] have very many expectations." Another respondent perceived that the profession was "expecting more but we're still bootstrapping" and struggling with entry level. Other respondents perceived that research and scholarly productivity were valued in the profession but the "[expectations] are not well codified at this point" or that "they're not specific and most of the time they're at the goal or aspirational level rather than at the mandate level." Another respondent stated that the profession "expects doctorally prepared people to do research . . . and some master's people but not everyone." A few other respondents described what they perceived to be the profession's expectation for them in terms of their current functions and personal expectations.

Overall, the comments indicated a need for greater generation, dissemination, and utilization of research in other than the scholarly subgroups where the expectations of the latter were consistent with those held in academe. As one respondent described, "research [should] be used to improve our status among other professionals [along with using] our findings in the clinical setting to improve nursing care."

Productivity Variables

Weighted measures of productivity

Based on recommendations in the literature, weighted measures of scholarly productivity were used to illustrate the scholarly output of the respondents and are displayed in Table 18. The mean weighted total

productivity for the group was 44.675 ($n=20$, $s=28.946$) for the past three years and 94.643 ($n=14$, $s=52.744$) for total career. When the productivity measures were divided by career age to adjust for differing lengths of academic careers, the mean total productivity for the group was 4.267 ($n=20$, $s=3.939$) for the past three years and 8.424 ($n=14$, $s=5.736$) for the total career. Following application of Pearson correlations on weighted productivity measures divided by career age, 13 of the 15 measures had significant positive correlations with $p < .05$ as indicated in Table 19. For the past three years and for total career, publication productivity yielded significant correlations with both paper presentation and funded productivity. Three-year funded productivity was significantly correlated with three-year measures for publications and papers presented ($r=.5733$, $p=.0082$, $n=20$ and $r=.8286$, $p=.0001$, $n=20$, respectively) but total funded productivity correlated with career total weighted publications ($r=.6647$, $p=.0036$, $n=17$), not papers presented. The range of total weighted productivity for the group was 2 to 113 for the past three years and 18 to 187 for total career.

Other productivity: Consultation, editorial boards, awards and honors

Other forms of productivity reported on the Pre-Interview Profile were used to further illustrate the respondents' scholarly output. Productivity in the forms of official off-site consultations, appointment and service on editorial boards, and research awards and honors received are illustrated in Table 20.

Table 18

Measures of Productivity for Established Nurse Researcher Sample

	n	Weighted Measures		Weighted Measures Divided by Career Age	
		Mean	SD	Mean	SD
Publications ^a					
Past 3 years	20	19.3500	12.7580	1.6952	1.4125
Total (Career)	18	53.1111	32.8864	4.1395	2.2462
Paper Presentations ^b					
Past 3 years	20	17.4250	16.5237	1.8416	2.1766
Total (Career)	15	34.6333	27.6918	3.4114	3.5893
Funded Grants ^c					
Past 3 years	20	7.9000	5.9196	0.7299	0.7238
Total (Career)	17	12.4118	9.2942	0.9746	0.4963
Total Productivity ^d					
Past 3 years	20	44.6750	28.9456	4.2668	3.9392
Total (Career)	14	94.6429	52.7437	8.4235	5.7356

^a Partial Publication Productivity = (# books X 4) + (# book chapters or monographs) + (# refereed journals X 2) + (# non refereed journals)

^b Paper Presentation Productivity = (# international papers X 2) + (# national papers X 2) + (# regional papers) + (# all other papers)

^c Funded grant productivity = (# federal grants X 3) + (# national grants X 2) + (# local extramural grants) + (# intramural grants)

^d Total Productivity = a + b + c

Table 19

Correlation Matrix for Productivity MeasuresWeighted
Productivity
Measures

divided by Career Age*	Weighted Productivity Measures divided by Career Age*					
	(A)++	(B)	(C)	(D)	(E)	(F)

Publication
Productivity

(A) 3 years	1.0000					
(B) Total	.7826**	1.0000				

Paper
Productivity

(C) 3 years	.7282**	.5514**	1.0000			
(D) Total	.5877**	.6759**	.8403**	1.0000		

Funded
Productivity

(E) 3 years	.5733**	.5164**	.8286**	.5740**	1.0000	
(F) Total	.5722**	.6647**	.1651	.2979	.6149**	1.0000

* Weighted publications, papers presented and funded research projects for the past 3 years and total career divided by career age

** Indicates level of significance $p < .05$

++ Letters at the top of Table 19 refer to categories illustrated in column 1 of this table

Table 20

Additional Forms of Productivity Reported by Established Nurse Researchers:
Off-Site Consultation, Editorial Boards, and Awards and Honors Received

	Past 3 Years				Total Career			
	n	%	Mean	Median	n	%	Mean	Median
Consultation *	(19)	--	3.76 (s=3.34)	3.00	(15)	--	9.13 (s=1.68)	0.50
None	3	15.79			3	20.00		
1 - 5	11	57.89			7	46.67		
6 - 10	5	26.32			1	6.67		
11 - 15	0	0.00			0	0.00		
16 - 20	0	0.00			1	6.67		
21 - 25	0	0.00			1	6.67		
26 or more	0	0.00			2	13.33		
Editorial Boards †	(20)	--	2.05 (s=1.57)	2.00	(16)	--	2.00 (s=1.71)	2.00
0	4	20.00			4	25.00		
1	4	20.00			3	18.75		
2	5	25.00			4	25.00		
3	2	10.00			0	0.00		
4	4	20.00			4	25.00		
5	1	5.00			1	6.35		
Awards **	(20)	--	0.60 (s=0.82)	0.00	(18)	--	1.00 (s=1.68)	0.50
0	11	55.00			9	50.00		
1	7	35.00			5	27.78		
2	1	5.00			3	16.67		
3	1	5.00			0	0.00		
4 or more	0	0.00			1	5.55		

* Represents the number of off-site, official consultations

† Appointment or service on editorial boards

** Awards or honors for research activities

Consultation. Respondents were asked to indicate the number of all types of consultation done during the past three years and during their total career. As illustrated in Table 20, more than 80 percent of the respondents have done consultation work. The mean number of consultations was 3.76 ($n=19$, $s=3.34$, median = 3.00) for the past three years and 9.13 ($n=15$, $s=12.34$, median = 4.00) for total careers.

Editorial boards. Appointment and service to editorial boards was reported by respondents for the past three years and for total career as illustrated in Table 20. Eighty percent of the respondents currently serve on at least one editorial board. The mean number of editorial boards that the respondents were appointed to was 2.05 ($n=20$, $s=1.57$, median = 2) for the past three years and 2.00 ($n=16$, $s=1.71$, median = 2.00) for total careers.

Awards and honors. Research awards and honors received by the respondents are illustrated in Table 20. Fifty percent of the respondents reported the receipt of at least one such award during their careers. The mean number of awards received by the respondents was 0.60 ($n=20$, $s=0.82$, median = 0) for the past three years and 1.00 ($n=18$, $s=1.68$, median = 0.50) for total careers. It may be noted that this category was limited to awards and honors for research and not for other forms of scholarly productivity such as Book-of-the-year awards or honors received for teaching excellence.

Early publications

During the individual interviews respondents were questioned about publication productivity prior to awarding of their doctorate and

immediately three years following the doctorate as indicators of early productivity. The mean number of publications prior to the doctorate was 6.50 ($n=20$, $s=8.179$) with a range from zero to 30 and a median of 3.00. During the three years following receipt of the doctorate, the mean number of publications was 9.50 ($n=19$, $s=10.392$) with a range of 1 to 40 publications and a median of 5.5.

Since studies in the literature have supported a positive relationship between early productivity and total career productivity, respondents were questioned about the effect of early publications as an influence on career productivity. Ninety-five percent of these respondents reported a positive influence. There were three predominant domains related to early publications: practice, building on a theme and credibility. The practice domain was clearly illustrated by one respondent who stated that "publishing is a learned process where if you have accomplished a few, it takes away the mysticism of publishing and so you are much more willing to do it." Another respondent simply described the learning process and stated, "it detoxifies the mystique about publishing." This practice domain was furthered through reinforcement and encouragement with the development of greater confidence in the skills needed for publication and in their own ability. The second domain of early publications was that of "building on a theme." This was illustrated by one respondent who stated, "I had begun charting a course for myself on which I could build." The third domain was credibility, as demonstrated productivity and ability for the acquisition of positions, promotions, tenure, and

grants. The overriding theme apparent in the respondents' comments was that of developing scholarly skills and the establishment of a program of research.

Publication preferences

Next, respondents were asked about preferences for certain types of publications. The overwhelming preference was for research-based publications in refereed journals. Books or monographs were viewed as viable options for the research when the amount of data required greater space and depth than was available through refereed article space. Preferences were also related to the data, as with multidisciplinary or specialty practice journals. A readership theme, or the audience the writer wished to address, was evident when the respondents described their perceptions of the most important factor in determining a source for dissemination of their scholarly work. As one respondent stated, "I want to reach the population that would be interested in what I found out." There were two components to readership: the focus and the distribution. The focus was apparent as the "appropriateness of the journal for the idea." The second component of readership was distribution, with respondents describing circulation and reputation of a journal. Appropriate journals with a larger circulation were preferred by several respondents. The reputation of a journal was described as "status", prestige, and "scientific standing." Several respondents cited which scientific journals they prefer and the limitations of others.

Authorship preferences. Respondents also discussed authorship preferences, single authorship, co-authorship, or multiple authorship. Preferences and selected comments are illustrated in Table 21. One respondent viewed this as an ethical issue, based on the number of contributors to the project. Preferences were generally based on the nature of the research project. Some comments related to the amount of work done by individual contributors when there was a long listing of authors. Others viewed single authorship as limited, as one becomes involved in collaborative ventures. One issue emerged from the interview data: the difference between authorship and writing of the article. Multiple authorship frequently occurred but respondents felt it was desirable to limit the writing to a single person or to a small group, with two to three authors.

Respondents were then asked to estimate their involvement in the three different types of authorship. The majority of the respondents (71.43%) had done some amount of all three types, or at least two of the three types (90.48%). Two respondents (9.52%) preferred and had done only single authored publications, while two additional respondents (9.52%) had done no single authorship preferring co-authorship or multiple authorship. Productivity for these four individuals was equally high whether single or co- and multiple authorship was preferred. For example, of books, chapters and monographs, and journal articles, raw totals for the past three years were 9 and 12 for the two respondents preferring only single authorship and 6 and 12 for the two respondents preferring only co- or multiple

Table 21

Reported Authorship Preferences

Type	n	%	Selected Comments
Single Author	5	23.81	<p>"I've preferred single because I could get them done fast and get them in."</p> <p>"Having a publication that is single authored may be looked upon more positively by the university."</p> <p>"I find I can control my time better and work better and I don't have the aggravation of worrying about the other person doing their piece on time."</p> <p>"Usually when you see a single author you wonder who did the rest of it."</p> <p>"I think it is very difficult for more than one person to write a totally logically consistent paper if this person writes this piece and that person writes that piece."</p> <p>"Single authorship is difficult. There are only certain kinds of studies, chapters, review articles, small little things you do usually."</p>
Co-Author	4	19.05	<p>"When you're on a project it ends up with one person writing and the other people editing. I don't consider that co-authorship although that's the way it goes a lot of time."</p>
Co-Author or Multiple Author	3	14.29	<p>"I see advantages in multiple [authorship] because you bring more dimensions to the paper."</p> <p>"If I can work with colleagues that are stimulating, that helps to get the work done."</p> <p>"I've also done collaborative things which I find to be very stimulating and it facilitates writing."</p> <p>"I think most nursing research is collaborative."</p> <p>"The bigger the project is, the more staff you have on board and the more people needing credit."</p> <p>"I think when you get beyond three, you have to question the amount of work done by the contributors."</p>
No Preference	9	42.86	<p>"Who cares who is the first author and who is the second author. The mere fact is that it was published period and leave it at that."</p>

authorship. Nine of the respondents (42.86%) had stated that more than 50 percent of their publications were single authored but three of these authors reported a recent change in the direction to work of co- or multiple authorship due to increasing involvement in collaborative projects. Generally, the preference was based on the nature of the study with a trend toward larger, more collaborative projects. Ethical considerations as to assigning credit to members of the research team or those being mentored was also addressed with collaborative ventures.

Goals for publication. Publication goals, whether by type, interest area, or quantity was the next area described by the respondents. One frequent theme was that publications were research or data-based and directed at refereed journals or, in the case of a large study or when presenting a large quantity of data, books. In fact, 70 percent described goals and preferences for research publications with further domains of preferences for clinical specialty, multidisciplinary, nursing research, or a representation across several types of journals. The group of respondents was divided in terms of goals for quantity of publications. Forty percent of the respondents denied having goals for publication output. Reflective of this subgroup, one respondent stated,

The number or the quantity or this many or that many per year doesn't bother me at all. It isn't a worry. . . Perhaps before Associate Professor and tenure, but now I've got all these projects happening and you'd be hard put not to publish. So that's a worry I left behind.

This subgroup focused on publications when they had "something relevant to say." Quality was also a focus in this group. One respondent

reported her perception that "setting goals like that compromises quality." The focus on research providing opportunities to publish was apparent. One respondent stated,

the important thing is doing the work and then exactly how much comes out of that research depends on the intellectual nature of the material and whether it breaks down into a couple of different discrete pieces or one single article.

Sixty percent of the respondents did report some goal but these were frequently ranges or a minimum number. The smallest goal reported relative to quantity was one article every other year and the highest was one article per month. In addition, one respondent stated a goal for 100 publications by a specific chronological age. The focus was on actual publications in print. As with the previous subgroup where respondents denied specific goals, the respondents who did state publication goals in this subgroup also indicated the opportunities to publish based on the research.

Network Variables

Only two network variables were of interest with the Pre-Interview Profile, professional societies and journal subscriptions, as included with Table 22. The majority of the respondents were members of the American Nurses' Association Council of Nurse Researchers (80%) and all had been inducted into Sigma Theta Tau (100%). In addition, 55 percent of the group were Fellows of the American Academy of Nursing. The mean number of professional journals subscribed to annually by the group was 5.84 ($n=19$, $s=4.11$).

Table 22Network Variables of Professional Societies and Professional Journals

Variable	n	%	Mean
Membership in Professional Societies	(20)		--
American Academy of Nursing	11	55	
ANA Council of Nurse Researchers	16	80	
Sigma Theta Tau			
Active	19	95	
Inactive	1	5	
Professional Journal Subscriptions	(19)		5.89 (s=4.11)
0 - 1	2	10.53	
2 - 3	4	21.05	
4 - 5	4	21.05	
6 - 7	2	10.53	
8 - 9	3	15.79	
10 - 11	2	10.53	
12 or more	2	10.53	

Communication with colleagues

Communication with off-campus colleagues was of interest as a network variable and described by respondents during the On-Site Interview. As illustrated in Table 23, respondents reported communication with colleagues on at least a monthly (90.48%) or weekly (61.91%) basis and tend to prefer using telephone conversations (85.71%) or written correspondence (42.86%). The nature of these communications focused on research for the majority of the respondents (71.19%) with discussion of information, activities, ideas, theory,

Table 23

Communication with Colleagues*

	n	%
Frequency of Communications	(21)	(100)
Daily	3	14.29
Several times per week	5	23.81
Weekly	5	23.81
Every couple of weeks	1	4.76
Monthly	5	23.81
Every few months to twice yearly	1	4.76
At meetings or when the need arises	1	4.76
Form of Communications **	(21)	
Telephone	18	85.71
Correspondence	9	42.86
Face-to-face, personal contacts	4	19.05
While at meetings	4	19.05

* This includes communication with colleagues in nursing and with those colleagues in other disciplines but with a related research interest. The nature of these communications related primarily to research activities, as reported by 71.19% of the respondents.

** Multiple forms of communications were reported by some respondents.

methodology, resources, and suggestions for dissemination. Several respondents described these communications as "keeping up." Relative to "keeping up" in the field was the opportunity for "state of the art" knowledge and learning things in advance of published forms of information dissemination. One respondent illustrated this by stating:

It puts you in the mainstream of what's going on and so you learn things two to three years ahead of time before they [are published]. You try

using and learn[ing] from other people's experiences and instruments before they're modified [so] you can avoid blind alleys and mistakes.

This opportunity was described by the respondents as available through formal presentations, informal discussion, and receipt of pre-publication manuscripts from colleagues. Discussion was also used for research related consultation on specific needs of either party and/or following referrals with someone also working in the area. In addition, other topics of their communications included professional organization activities, for speaking engagements, plans for meeting at some session, or relative to a specific organizational activity.

Networking activities

Influences. Most of the respondents perceived networking as influencing the dissemination of their work. As one respondent stated, "it expands the base and [the number of] people who are aware of what you're doing and your contributions and [who] might contact you." Other respondents described how networking facilitated the peer review process, both formally and informally. Another positive influence of networking described by several respondents related to "name reception" so that the individual as well as the work is known. This awareness of the person was further described by other respondents as leading to more collaborations, paper presentations, and recognition in the field.

Importance. Network activities were identified as important by the respondents and revolved around the themes of intellectual stimulation, discussion, and sharing. Two respondents described these activities as an "enhancer of motivation" and "solidifying what you're

doing." Respondents were asked to rank the importance of network activities on a ten-point scale with 10 as the most valuable or important. The mean importance reported by the group was 8.44 ($n=20$, $s=1.79$) with a median of 9.50. Although all forms of networking were described, the main theme of the respondents' comments was that of "substantive sharing" with the social aspects described infrequently or less positively. The respondents described a variety of specific methods they use with their network which may be selected colleagues in their area of research or a subgroup of a larger organization. Networking with these sources had a serious, goal-oriented nature and/or a group purpose. The term "networking" did not always have a positive interpretation when it is used as a label for free time blocks at meetings. One respondent described how nursing was trying too hard to make networking "happen", but that the concept itself was generally perceived as positive.

Value. To clarify the value of networking, respondents were asked which activities were most valuable for the nurse researcher. Three domains of these networking activities were apparent, initial contacts, non-specific contacts, and direct contacts as illustrated in Table 24. Initial contacts occurred through research meetings and organizational activities, where learning opportunities were available for both substantive content and for initial contacts to expand the network. Non-specific contacts occurred through informal contacts at social gatherings and meetings and were designed for maintaining contact with groups of similarly minded people, not necessarily in the same area of research. Both of these contacts led to more specific, goal-oriented

Table 24Network Activities Valuable for the Nurse Researcher

Domain	Activities	Content
Initial Contact	Research Meetings	Collaborators/researchers identified Information on work in research area Keeping current in the field Broad exposure and opportunity to raise questions and get ideas Forum for evaluation of paper or research presented
	Organizations (non-specific to research)	Discussion and stimulation
Non- specific Contact	Informal	Support
	"Get-togethers" or Social Meetings	Friendly exchange Respect communicated for each other's work Discussion and stimulation
Direct Contact	Direct	Discussion of ideas and obtaining feedback, guidance, validation
	Communication: telephone correspondence face-to-face	Consultation Sharing of information, materials, resources Letters of recommendation Referrals
	Special Interest Resources: Computer networks Interest groups Task forces Workshops	Fostering of communication in specific groups or subgroups focused on a need, program, or task but specific to the interest of the participant

contacts directed at the area of research interest. Discussion and feedback related to theory and research activities were common.

Mentorship

Mentorship experiences, as a mentor and/or as a mentee, were considered under network variables and discussed during the interview. Generally, mentorship was perceived by the respondents as an ongoing relationship related to the career development of the individual being mentored. Perceptions of the degree or depth of this relationship between the mentor and the mentee varied among the respondents. In addition, several respondents described the issue of acknowledgment of the relationship by both parties. This issue of mutual acknowledgment created some difficulty, as expressed by some respondents, in quantifying the number of individuals mentored. The respondents were able to identify the number of mentors they had had more readily than those they had mentored. In fact, several respondents reported individuals who claimed to have been their mentees but, at the time, they had not perceived this to be a mentorship relationship. The respondents' perceptions provided two time dimensions to mentorship. First, there was the ongoing nature of the relationship. Secondly, changes in the relationship or types of mentor relationships occurred over time in accordance with the mentee's needs.

Mentors. The mean number of mentors reported by 20 of the respondents was 3.30 ($s=2.96$) with a median of 3 mentors. All of the respondents who had had mentors reported this as a valuable experience, though not always positive. Several respondents reported mentorship

experiences but described them as atypical of the current concept of mentorship appearing in the literature, as a non-formalized relationship, or as having different characteristics at different points in time. There were two major themes apparent in the respondents' descriptions of the value of these experiences, support and learning. The support theme contained domains of encouragement and guidance related to career development. One respondent described the value relative to the role of mentors as "confidence builders and door openers." The second theme was learning or the teaching function of the mentor. This second theme contained the domains of role modeling, transmission of values and "standards of professorial conduct," and development of skills for thinking, research, funding, or survival as an academic.

Mentees. There was great variability in the number of individuals mentored by the respondents which ranged from none to 127. The mean number of individuals mentored by 19 of the respondents was 17.26 ($s=29.85$) with a median of 8 mentees. Student mentees described by the respondents included research assistants or individuals they had directed through thesis and/or dissertation research. Other respondents focused on mentees where there was a sustained relationship external to expected faculty role functions. Several respondents also reported faculty members they had mentored. Of the 16 respondents who had been mentors, all reported this to be a valuable experience to them personally.

Value of mentorship. There were three themes related to the value of being a mentor, gratification, learning, and generativity. Personal gratification was the theme most often described by the respondents and it included the rewards, pride, and satisfaction which accompanied the development and the further success of the individual they had mentored. Learning occurred as the second theme of the mentor role through stimulation, interaction, and reflection. One respondent described one of the benefits of the relationship as, "having somebody look at something with a very fresh approach, challenge your dearest assumptions, reject everything that you think is important, and help you evaluate what you've got. . ." Another respondent mirrored this sentiment by stating, "learning occurs both ways because I think that the mentee -- you get to know her very individually and with that you get to see her perspective and the kinds of linkages she's able to make, just because of the person." Other respondents considered mentorship as "another way of learning" and as "a way of keeping you tuned up." Generativity with the transmission of values and training of the next generation of researchers was a third theme of mentorship, occurring at a higher level than gratification and learning. One respondent described this as:

I think any time you are involved in helping another person grow and develop there is a certain kind of beneficial influence that when you bring them that experience, there's a satisfaction, a certain amount that's reinforced that they're carrying on your values. . . It's like children with a kind of regeneration and extension.

Another respondent described the transmission of a value system as adding a philosophic dimension to nursing practice. Still another

respondent identified mentorship through generativity as a personal variable:

. . . it's more of a personal variable because [it's through] your knowledge of them more in-depth as people that you clearly gain as a mentor plus the exercise of generativity that's so pervasive in being in the role of a teacher. . . . The giving to the next generation is very rewarding.

Roles of the mentor. The respondents who had served as mentors were asked in what ways they perceived their mentoring activities to be valuable for the mentees' development as a researcher. Their activities fell into four major areas or roles, role model, advisor, supporter, and facilitator. As a role model, respondents provided their mentees with exposure to a successful researcher. Several respondents described how mentees viewed the mentor's commitment to research. One respondent described how the mentee "lived" the research process with the mentor seeing all the problems along with the "nice scientific progress." Another respondent described how the mentee "participated [at various stages of the research process] without having to shoulder the blame for anything that went wrong." The second domain of mentoring activities was that of advisor. The mentor had certain expectations of mentees and provided them with assistance on design, methodology, analysis, problem solving, and the development of specific skills, especially writing skills. Being an advisor involved activities of critique, discussion, and counseling and was related to the teaching and learning roles of mentor and mentee with respect to research. The third domain was supportive activities used by the mentor in building confidence and reinforcing efforts of the mentees.

Respondents described the value of constructive critique and comments, trying always to "accentuate the positives" and to leave the mentee with "something of an accomplishment." One respondent described her style as "instill[ing] enthusiasm and foster[ing] growth without destroying what they come with." This domain was individualized to the mentee's personality and ability and illustrated by another respondent who described providing feedback at the individual's highest level of integration:

The quality of the feedback, feedback so as it matches with what they can aspire to I think that's an important thing to give to the person so that they can be stimulated to do their best.

The fourth domain included activities for facilitation of the mentee's career development. These activities related to counseling about career decisions, development of a research program, and providing opportunities for dissemination of research through publications and presentations.

Research Orientation

Variables of interest related to research orientation included research success influences, preferences, habits, and methods for continuing development.

Research success influences

Similar to career influences discussed earlier with professional variables, research success influences indicated by the respondents fell into three major domains: colleagues and the work environment, educational preparation, and personal characteristics. Collegial and work environment influences were reported by 40 percent of the

respondents and were attributed to specific role models, mentors, co-investigators, collegial support, and promotion of research in the environmental context. Educational preparation as an influence on their research success was cited by 40 percent of the respondents based on perceived strength of their preparation, experiences and requirements during various educational programs, and mentors, role models and advisers. Personal characteristics influencing research success were also reported by 40 percent of the respondents. These personal characteristics included the following: "the tendency to persist with complex tasks", "self motivation and perseverance", "curiosity and internal motivation", "hard work and dedication", "energy and commitment", "hard work and creativeness", and creativity, desire, stubbornness and persistence. One respondent described her own intellectual functioning as the "ability to do more work per hour than average so [she] can stand overload created by research." To a lesser extent than with career influences, the fourth domain included influences of spouses and friends other than nursing colleagues providing encouragement, support and guidance, as reported by 15 percent of the respondents.

Human influences on research success. In terms of influences on research success described during the On-Site Interview, human factors were described from mentors, colleagues, teachers, faculty, and deans by 57.14 percent of the respondents. Although one respondent identified the influence of negative role models in nursing, no individuals external to nursing, doctoral education, or research programs were identified as influencing research success.

Contextual influences on research success. Two-thirds of the respondents described contextual influences for research success including educational preparation, research opportunities, environmental factors, and reward systems. Educational influences occurred at both the undergraduate and graduate levels with the end result of a strong preparation and appreciation for research. Research opportunities for the respondents occurred in practice or as a result of a special program or conference attended which led to the development of further interest. Environmental influences fell into the areas of normative expectations for research instilled early in the academic career and the reward system in place for reinforcement. As one respondent stated, "Let's face it. I think a major motivating factor is the reward system, the expectation system So external sanctions were in place here. Rewards and sanctions."

Personality influences on research success. Personality factors related to research success were described by 47.62 percent of respondents and included feelings of boredom and stagnation, inner motivation, enjoyment of and desire to do research, disillusionment with role models, the "joy of achievement", pride, and the need for credibility. Other personality traits included intelligence, thinking analytically, and "giving primacy to career development." Basically, during the interviews, respondents supported earlier written responses on influences but demonstrated more interpersonal and family influences related to career influences and educational and environmental factors as influencing their research success.

Research preferences

Established nurse researcher respondents were asked about their research preferences during the On-Site Interview. Utilizing categories developed by Bloch (1985), these preferences were reported predominantly in two areas, (1) fundamental processes of biology and behavior and (2) nursing practice as illustrated in Table 25. The majority (80.95%) of the respondents' preferences related to client issues, with 95.25 percent of these respondents reporting the majority of their research and publications in this area as well. The one respondent who reported that most research and publications were not in the area of research preference described a diversity of areas related to the "eclectic" approach of her research program. Factors which influenced preferences for fundamental processes or practice areas fell into three themes, interest, educational background, and clinical practice background. Respondents reported their interest and commitment to the area of preference as influencing the focus of their research efforts. One respondent described this interest as follows: "it's the state of the art -- where we are and what we need to know -- and to really try to come up with implications for practice." Educational background and preparation in graduate programs, particularly doctoral education, and past experiences as clinicians were described as a major influence on their chosen area of research preference. Respondents with preferences in the areas of fundamental processes and nursing practice often reported preferences and research studies in both areas, especially when involved in multiple projects or when engaged in large multiple purpose projects.

Table 25

Research Preferences Reported by Established Nurse Researchers

Preferences	n	%
Primary Research Preferences *	(21)	(100)
Fundamental processes of biology and behavior	16	76.19 **
Nursing practice (nursing process and nursing intervention)	13	61.90 **
Nursing education (educational process)	2	9.52
Nursing profession (focused on the practitioner)	2	9.52
Areas of Preference Reported	(21)	(100)
1 area	8	38.10
2 areas	12	57.14
More than 2 areas	1	4.76

* Categories developed by Bloch (1985, p. 133)

** Percentages >100% due to multiple areas of preference reported by 13 respondents reflecting work on multiple purpose projects or on multiple projects.

A minority of the respondents reported preference in two of the other categories of research developed by Bloch (1985). Individuals preferring nursing education described this as the focus of their present practice with students as the units of analysis. One respondent further pointed to the need for research based data for good decision making in academic nursing settings. For the respondents who stated a preference for research on the profession of nursing, interest and early professional organizational influences were described as leading them to this area.

As part of the selection process for established nurse researchers, respondents were identified as having programs of research. These were described during the interview as providing data for further development of the knowledge base of nursing. Clinical problems or patient conditions were the focus of 61.90 percent of the programs of research. In addition, 14.29 percent of the research programs related to physiologic conditions, behaviors, or health problems utilizing basic research. Research programs related to the profession of nursing (14.29%) were concerned with assessment, ethical, and political behaviors of nurses, ultimately affecting nursing care to clients. Two respondents (9.52%) had research programs focused on the academic preparation of nurses but these researchers described additional research projects which utilized similar concepts and theoretical bases in their respective clinical specialty areas. In general, the respondents' programs of research were contributory to the development of knowledge in nursing and ultimately providing data which would be clinically relevant.

Research habits

A sense of commitment to research continued to be apparent in the respondents' descriptions of their research habits during the On-Site Interview. Several respondents characterized their habits as "sporadic" with this sporadic nature descriptive of their visible productivity and not inclusive of the reflective time for idea generation and reading literature in their area of interest. This was described by one respondent who stated, "there are probably equal periods of taking in, reflection and not 'outputting' anything and periods of equal productivity." Another respondent illustrated her research habits in this manner:

I'm what I call a "marathon worker." I don't do a constant output from day to day, week to week but I'll do an incredible output in one block of time and then nothing. It's not "nothing." It's like subterranean work that's going on before that big output.

The general themes of research habits for the respondents were concentration and devotion to the project(s). There were five major domains under these themes: creating an environment for productivity, time management, the ongoing nature of the work, being methodical, and being involved in multiple projects. Another domain reported by approximately 43 percent of the respondents was related to collaborative work.

Creating an environment for productivity. The first domain of research habits apparent in the respondents' comments was the creation of an environment for productivity. Freedom from distractions and providing the opportunity for concentration were essential in the

developmental and final stages of the research project especially related to writing of the proposal or findings. As one respondent stated, "a quiet environment is definitely important to concentration." Distractions from telephone calls, unscheduled visits by people, and socializing in the hallways were cited as problems to working in the office. Two respondents described the habit of getting to the office a few hours early and working on their research before the usual activities could interrupt them. The major way respondents freed themselves from such distractions was to have an alternate site for work -- at home, in another office, or in a library. An office at home was most frequently described as the preference for writing where materials such as copies of articles and the data set and where word processors, typewriters, or blank paper and pencils were provided. The home environment also allowed the opportunity for moving around without breaking one's concentration. In addition, several respondents described family members as respecting their need for uninterrupted concentration.

Other sites used by the respondents for developing a problem or for writing were additional offices on campus or libraries. One respondent described the use of quieter off-campus libraries where she could concentrate on the task without interruptions from students, colleagues, or telephone messages. An important environmental influence on this preference for working out of the office was the support from school administration for doing this and not requiring a certain number of hours per day or week on site. Respondents reported

their perceptions of trust from administration but also described the inherent accountability in that evidence of productivity was expected from administration, colleagues, and themselves.

Time management. Strategies for time management used by respondents included using blocks of time and creating the time for research activities. Concentration and devotion to the project were also provided for by using blocks of time. One respondent described this as, "I prefer to work intensively for periods of time so I don't lose my thinking because otherwise it takes me so long to catch up." Another respondent reported, "every chance I get, I take the block of time to immerse myself." These blocks of time were usually a minimum of one day in length and were devoted to the idea generation and the writing phases of the research process. Working on the project for only short periods was reported by one respondent but the pervasive attitude was that of commitment to an ongoing effort.

Respondents used several strategies for making time for research including adding the time rather than eliminating other professional activities, placing limits on selected professional activities, setting and respecting priorities, and using time efficiently. In the area of adding time, respondents described working on weekends, in evenings, on vacations, and during sabbaticals. One respondent stated, "I basically consider that I'm working a six-day week and that may mean I work at home one of those days." Another respondent reported, "If I'm wanting to meet a deadline, I will work through until I meet my deadline regardless of how many hours it takes me to do that." And still

another respondent described, "if you don't have [the time], you carve it out between 11:00 and 12 midnight." Several other respondents stated they just worked hard with one respondent adding, "there's only one speed, 'full ahead'."

Yet, several respondents described having to place limitations on certain activities. These limitations required setting priorities and respecting those decisions. Limitations placed on other activities were in the areas of travel, paper presentations, consultation, clinical practice, committee work, and socializing with others. One respondent reported, "I am more discriminating in what I say I will do as far as presentations. I don't talk about 1500 topics any more. . . ." Another respondent described similar limitations and stated, "you have to say 'no' to some committees, . . .to some speaking engagements -- so you learn what you can say 'no' to and what you say 'yes' to." This was further described by another respondent as "making choices." Part of these limitations was, as one respondent stated, "knowing what your personal limit is." Although time was added to professional activities and limitations were placed on others, respondents still described the need for a "balanced life" and working toward some reward as a goal once the work is finished. Making difficult decisions as to priorities included these self-selected limitations. Further, once priorities for research were set, it was vital that they be respected, whether it was the number of speaking engagements accepted, the number of abstracts submitted, or maintaining the blocks of time for research and writing each week.

Organization of activities and efficient use of time were part of the respect for time and the priorities set. Some respondents stated, "avoid the trivial", "don't sit around wasting time", and "keep meetings efficient." Another strategy used by the respondents is the integration of teaching, research, and service as part of their faculty roles. This was described by one respondent in the following manner:

The secret to my still being alive is integration and what I try to do is to integrate many elements of my faculty rôle to the extent I can. . . And I really try to use what I study as a vehicle for what I teach and what I teach as a vehicle for furthering what I study. . . So a block of time is multi-purpose time.

The domain of ongoing activity or effort involved a sustained engagement in the research and the mental work over time. One respondent described her activity:

I try to do something every day that's pushing [the research] forward. . . so that I feel like I'm always doing something even if it's [pushing] the trivial parts of it forward. That serves the purpose also of keeping my mind on the project so that when I get those blocks of time, I can get into it because to me it's not purely time, it's time as interpreted by available energy level when you've got that time.

Another respondent reported, "the research is so intertwined that I probably do something for the research every day but chunks of it are visible and chunks of it are totally in the data."

This ongoing nature related to the mental processes as well as other supportive activities like collecting articles, reading, maintaining an "idea file" for other projects, and writing. Although the research was always ongoing, respondents' styles differed in how they implemented this continued activity. One example of this related

to writing. Several respondents tried to write something every day.

One respondent described this:

One of the other things I [do] is write on an ongoing basis rather than waiting to complete something. . . Even if what I write now has to be changed six months later or completely revamped, I find writing important from a number of standpoints. The first thing is that when you're fresh . . . you put [the ideas] down so that you don't lose them. The other is that when I write, I'm more able to think at a different level of intensity and vigor than when I'm not writing. I'm more engaged.

Other respondents reported times when little writing was done, almost like a period of incubation. Then, they were able to produce large amounts in a short period. One of the respondents described these periods of variable output:

My optimum productivity seems to come. . . in my busiest time. I'll read and sit and catch up on my journal articles during the other time but sort of like in February, something goes off in me and I'll just sit down and write. I've noticed that. We have here a bimodal pattern connected with some kind of biorhythm but I don't know what happens to me every six months.

The important aspect transmitted by the respondents was that the research was never really put aside. Something was being done at all times, whether there was tangible evidence of this or not.

The fourth domain included evidence that these research habits were not haphazard efforts. Respondents saw themselves as methodical, organized, and careful researchers. Being methodical and organized was most frequently described in relation to the development and planning phases of the project with some respondents providing a large amount of time, structure, and effort at this point to ensure the accomplishment

of the research purposes. One respondent described this as, "I'm super organized so that I'll invest an incredible amount of time in setting something up and then it almost runs itself." Another respondent described this up front effort similarly and stated, "later I'll follow my own directions. . . , I just act like a kind of robot." Respondents also described their carefulness and desire for accuracy. As one respondent reported, "it really helps to keep on top, to be organized, anticipative, and also handle a large amount of detail." Use of deadlines and time frames were illustrated by several of the respondents.

The fifth domain of research habits contained the respondents' preference for involvement in multiple projects. As reported previously under personal expectations, the more established nurse researchers tend to be involved in multiple projects. One respondent reported, "unless I've got five or six projects going on, I'm just not happy." Another respondent described how, during the period of one day, she "may have dimensions of a couple of studies going on." Although this seems to be a preference, another respondent described the utility for involvement in multiple projects:

It became quickly apparent to me that if I was going to do well here, that I couldn't have just one study happening . . . If I've got two or three studies going that need my attention and my expertise . . . it is not nearly as stressful to me than having one little darling study that isn't doing or accruing patients as it should or whatever. I do the best when I have more than one . . .

Another respondent described her recent change to working on multiple projects after having completed a certain number of studies in serial

order but that a progression and a building of the work is essential for moving toward something significant. In their descriptions of the multiple projects, most respondents indicated that these projects were at different points, some at the proposal stage, some awaiting funding, some in data collection, some in analysis, and some at the point of writing the final results.

Collaborative efforts with colleagues, especially campus colleagues in nursing and in other disciplines, was described by 43 percent of the respondents. The important aspect of this transmitted by the respondents was discussion with colleagues whether on a solo project or a team project. On a solo project, collaboration was used as a form of peer review for feasibility and merit of the project. This was described by one respondent who stated, "I usually check [my idea] out with a couple of colleagues and if they think it has merit, [I] move right along." Although not on the same project, a mutual helping relationship was described by several respondents for efforts of this nature along with consultation on specific areas when needed. Collaborative relationships on team projects were described in developing, conducting, and completing the project with opportunities for "debate," problem solving, division of labor, and refinement of final manuscripts. Respondents described one research team member as taking the lead on the development or dissemination of the project but that this rotated between or among stable members of the team. Still, some time alone was reported as necessary on collaborative team projects. One respondent described this in the following manner:

There is probably a balance with what I like to do by myself versus what I like to do with staff. I really need time that I have on the project when no one else is working with me. I have to have time alone throughout the project.

Another respondent described the need to bring the "core idea" to the group and stated, "I like to think about the idea alone but I like to develop the idea with a group." For those respondents who work on team projects but really prefer the "solitary mode," delegation was described as an important skill with the need to train staff members so ". . . that standards of accuracy and following through. . . are really going to be met." Part of delegation skills was also the realization that ". . . you can't do everything yourself."

Methods for continued development

Methods or activities for further development of research expertise were described by 19 of the respondents. The theme of their methods was self-selected study based on perceived personal needs related to a current project or interests in a particular area. Specific activities described are illustrated in Table 26. Reading literature or reviewing specific references of interest was the major activity described by the respondents. Taking courses for credit, auditing courses, or attending seminars on specific topics were also described as useful to address identified learning needs of the respondents. One respondent described the need for short courses developed for doctorally prepared nurses since the majority of continuing education programs are directed at a clinician audience and do not meet the needs of advanced researchers.

Table 26

Activities Used by Established Nurse Researchers for Continuing Development of Research Expertise

Activity	n*	%
Reading	14	73.68
Formal or Informal Coursework **	11	57.89
Attending Conferences, Meetings, or Workshops	10	52.63
Consultation		
Seeking consultation	9	47.37
Providing consultation	10	52.63
"Keeping in touch" with colleagues in area (networking)	3	15.79
Ongoing nature of the research (continuing research work)	3	15.79
Writing for publication	1	5.26

* Percentages are based on the number of respondents who were asked to describe methods used to further develop research expertise, N=19.

** Includes courses taken for credit, courses audited, short courses, and seminars.

Learning opportunities were also described by respondents when seeking and/or providing consultation on research. Seeking consultation from experts in a specific area provided for continued development of expertise based on needs with a current project or in specific area identified. Providing consultation also served as a vehicle for further development with review of research proposals,

service on dissertation committees, and work with graduate students or faculty peers. One respondent described this opportunity for development through consultation as "taking on challenges." Consultation activities provided respondents with the intellectual stimulation from other people's ideas and research designs along with learning about different methodologies.

Other opportunities for development of expertise occurred through attending professional meetings and conferences, "keeping in touch" with colleagues in the area, and continuing research activity throughout the year necessitating learning as specific needs arise. In addition, writing for publication was described as providing additional learning needs and opportunities during manuscript preparation.

Environmental Characteristics

Organizational influences are apparent in respondents' descriptions related to individual characteristics in the previous section as individuals operate in a context, whether it is family, academia, the profession, or society. Organizational variables of interest specified on study instruments included geographic location, institutional type and sponsorship, organization of the nursing division, program offerings, age and size, institutional mission(s), support for research, research requirements, and characteristics of environments.

Data on environmental characteristics facilitative for research at sites recognized for productivity of nurse academicians were obtained using two study instruments. The Organizational Environment Form was designed to complement information provided by the Established Nurse

Researcher respondents with data provided by a representative from administration of the School of Nursing unit.

General characteristics of the study sites are illustrated in Table 27. Although all geographical regions were represented, the majority of institutions were located in the west. Sponsorship for six of the seven institutions was through state support with the institutions classified as research universities or specialized health center units under the Carnegie Classification (1976). Approximately 86 percent of the academic nursing units were organized as schools of nursing in the university. Degree offerings at the study sites are displayed in Table 28 with general administrative characteristics of the academic nursing units illustrated in Table 29.

Institutional Missions

The primary mission of the sites was of interest as an organizational variable for the context of the respondents. This variable was aimed at perceptions of scholarly and research orientation in the institutional environments.

Primary mission

On the Pre-Interview Profile respondents indicated their perceptions of the primary mission at their respective institutions. Research was ranked first by 90 percent of the respondents with 65 percent indicating research as the primary mission, 20 percent stating that research and teaching were both the primary mission, and 5 percent reported the combination of research, teaching and service as the primary mission. Only 10 percent of the respondents indicated that teaching was the primary mission at their respective institutions.

Table 27

General Organizational Characteristics of the Study Sites

	n	%
Geographic region	(7)	(100)
North Atlantic	1	14.29
Midwest	1	14.29
Southern	1	14.29
Western	4	57.14
Sponsorship	(7)	(100)
Public	6	85.71
Private	1	14.29
Carnegie (1976) Classification	(7)	(100)
Research University I	4	57.14
Research University II	1	14.29
Specialized Unit	2	28.57
Academic Nursing Unit Organization	(7)	(100)
School of Nursing	6	85.71
College of Nursing	1	14.29

When representatives from the dean's office at six study sites reported on the primary mission as stated at their institution, responses were similar to those by the Established Nurse Researcher respondents. Research was again supported as the primary mission alone in first place (50%), as the primary mission but equally with teaching (16.67), or in combination with teaching and service (16.67%). Only at one institution (16.67%) was teaching reported to be the primary mission.

Table 28

Graduate Nursing Degree Offerings at Study Sites

Degrees	%	%
Master's degrees in Nursing	(7)	(100)
Master of Nursing (M.N.)	1	14.29
Master of Science (M.S.)	3	42.86
Master of Science in Nursing (M.S.N.)	2	28.57
Both M.N. and M.S.	1	14.29
Doctoral degrees in Nursing	(6)	
Doctor of Nursing Science (D.N.Sc.)	1	16.67
Doctor of Philosophy (Ph.D.)	4	66.67
Both D.N.Sc. and Ph.D.	1	16.67

Table 29

Characteristics of Academic Nursing Units

	n	Mean	Standard Deviation	Median
Program ages, in years				
Baccalaureate	7	57.43	11.36	60.00
Master's*	7	36.57	10.08	27.00
Doctoral	6	12.50	6.53	9.50
Program sizes				
Faculty head count**	6	107.83	50.85	113.00
Students, F.T.E.				
Undergraduate	5	295.60	214.27	258.00
Graduate	5	260.80	149.27	226.00
Postgraduate	1	--	--	--

* Descriptive statistics based on six study sites with doctoral programs in operation.

** Respondents were requested to report full time equivalent enrollment

Ranking of tripartite missions

During the On-Site Interview respondents further discussed institutional missions of research, teaching, and service. Respondents ranked each mission for emphasis at the institutional level and for individual preference. Results of these rankings are displayed in Table 30.

In the ranking of perceived institutional preference, research was ranked first (80.95%) or tied with teaching in first place (4.76%) by 85.71 percent of the respondents. Further, each of the three respondents from 5 of the 7 sites ranked the institutional missions in the same order for their respective institutions. Respondents described this preference at the institutional or the school level related to the reward structure of promotion, retention, and tenure. Although a preference for research at the institutional level was evident at all sites, respondents described differences in the size of the intervals between the three missions with research sometimes well above the other two missions or with service as a very low third in the ranking.

Respondents were then asked to rank their individual preferences for the three missions of research, teaching, and service. Again, research was ranked first (57.14%) or tied for first place (33.33%) by a majority (90.48%) of the respondents. Respondents supported their preferences for research and described how this was operationalized in teaching, service, and scholarly productivity. Several respondents described their functions within the three missions with teaching and service integrated in their research, therefore, preferences were not mutually exclusive.

Table 30Rankings of Institutional Missions as Perceived by Established Nurse Researchers

Ranking*	Institutional Preference		Individual Preference	
	n	%	n	%
Research = 1	16	76.19	12	57.14
Teaching = 2				
Service = 3				
Teaching = 1	3	14.29	1	4.76
Research = 2				
Service = 3				
Teaching = Research = 1	1	4.76	4	19.05
Service = 3				
Research = 1	1	4.76	0	0.00
Service = 2				
Teaching = 3				
Research = Teaching = Service = 1	0	0.00	3	14.29
Service = 1	0	0.00	1	4.76
Teaching = 2				
Research = 3				

* Rankings in order of perceived preferences for the tripartite missions of the American university

Respondents believed it was important that institutional and individual preferences be congruent. This need for congruence was described in relation to retention and satisfaction in the system, especially in terms of the reward or reinforcement structure in place. Several respondents described this need for congruence in terms of a shared value system between the institution and the individual.

"Problems" and "frustration" were described as the result when values were discrepant. Alternate places of employment, like state colleges with a teaching focus, were suggested when a better "fit" or "match" was possible for the individual with a preference other than research.

Support for Research

Contextual support for research and scholarly productivity was of interest for the environments of the nursing discipline and academia. The general theme which emerged from the respondents' comments on environmental support was the "valuing" of research in nursing. This value was described as necessary for research and scholarly productivity with emphasis placed on the need for practice-relevant nursing research and recognition of the researcher role in specific institutions, organizations and for the nursing profession in general.

The nursing profession

Two domains emerged from the respondents' comments on support for research from the nursing profession, opportunities through professional organizations and validation of efforts. One respondent's comments illustrated these domains of environmental support perceived from the profession:

. . . The kinds of things that. . . sustain you are (1) the validation that somebody else out there is convinced you're not crazy and that you may in fact have a worthwhile idea and (2) the access to tangible support and informational support when you need it.

Professional organizations. These organizations provide support for research through conferences, meetings, and awards with an increasing emphasis on practice-relevant research. Respondents

described the support as psychosocial and substantive as provided through intellectual stimulation, the opportunity for thoughtful critique, and the sharing of ideas and information with a community of scholars. Professional nursing organizations and specialty nursing groups were described as vehicles for this support. In addition, organizations particularly promoting research were identified by the respondents and included the Council of Nurse Researchers, Sigma Theta Tau, and the Center for Nursing Research at the National Institutes of Health.

Validation of efforts. Support through validation of one's work was described as reinforcement for research efforts and occurred through peer review, funding and the provision of resources, and with the extension of theoretical work by others. Dissemination opportunities also provided for this validation of efforts in research through the increased number of nursing research journals and research-focused conferences. This sense of validation of one's research efforts was perceived as particularly supportive when it resulted through thoughtful peer review or by peers in their area of research interest.

Academia

The academic environment provided support for research, mainly through the expectations for research and the pursuit of knowledge as part of the academician's role. This expectation was further supported by the resources available in the setting. Three domains were apparent for support in academia, expectations, facilitation through funding and resources, and the collegial atmosphere.

Expectations. In the academic environment reward structures related to promotion, retention, and tenure and the status given to research by colleagues, students and society provided expectations for research. Respondents reported that unique to academia is the reflective time and the freedom to pursue research which is not readily available in nursing service settings. One respondent described this reflective time as "the merit of academia [in that] you can control your time far more so than in practice." Service agencies, unlike academia, were described as imposing limitations on research through economic demands for cost effectiveness and a focus on immediate applicability of the findings.

Facilitation through funding and resources. Monetary and tangible resources in the academic environment were described by respondents as a second domain of support for research. Respondents described the availability of funds for research in the academic setting. Intramural funds were described as facilitating research but were also precursors to extramural funding. Financial facilitation from the school or university was used for pilot studies prior to the grant application process or for projects with limitations in scope. Respondents described the novice researcher as needing to seek and use intramural funds in the development of a research program and a "track record" to demonstrate ability in order to obtain extramural funding. At three of the seven sites, respondents reported the availability of intramural grants or special research positions for summer semester faculty salaries. Faculty in these three settings were on nine month contracts

and could apply for this funding as a supplemental salary while conducting research or doing consultation work for the school. In another setting where the faculty was on 12 month appointments, the summer semester had little or light teaching responsibilities and was an opportunity for faculty to devote additional time to research efforts.

Tangible resources included staff and support services, research support units in the school of nursing, and additional environmental resources. As one respondent described the need for such resources in academia, it was reported that "the difference between the university where [resources] are available and [the university] where they are not . . . show up in the data." Resources for research will be discussed later in this section.

Collegial atmosphere. The third domain of support for research in academia identified in the respondents' comments concerned the collegial atmosphere. Academic colleagues provided intellectual stimulation, learning experiences, and opportunities for collaboration and consultation. This was described by one respondent as "an openness to exchanging ideas and sharing information." Another respondent stated that "most important [in academia] is the cohort of other people that are doing [research]."

Resources for research

Respondents were asked to list support services and other resources necessary or desirable for research activities. Major resources reported were secretarial services, administrative support,

computer services, financial support, subjects, collegial support, libraries, assistance with data collection, physical space, time, and illustrative media services as illustrated in Table 31. Additional essential and desirable resources listed by a few of the respondents included human subjects committees, travel funds, reward structures, good ideas, and electronic mail systems. Resources listed were related to the respondents' preferences for particular research types and methodologies, for example, research assistants versus physical measurement equipment for data collection and mainframe computers versus personal computers for data analysis. The scope of the research was described related to other resources needed like extramural funding, office space for research assistants and team members, and secretarial services. Several respondents described how the research may start as a pilot or small study with intramural funds but extramural funding becomes necessary with larger samples, extensive designs, and extension studies. These differences in degree of resources were particularly apparent with secretarial services, funding, and physical space. Resources described as most useful by the respondents were those perceived as essential.

Environmental Characteristics for Research at Study Sites

Respondents were asked to describe their respective academic environments during the interview. Environments were positively portrayed in the respondents' descriptions with a theme of environmental facilitation and the domains of scholarly expectations, administrative support, tangible resources, and collegial support.

Table 31

Established Nurse Researchers' Perceptions of Necessary and Desirable Resources for Research Activities

	Necessary		Desirable	
	n	%	n	%
Secretarial Services *	13	61.90	6	28.57
Administrative Support	10	47.62	2	9.52
Computer Services	10	47.62	1	4.76
Financial Support or Funding *	9	42.86	6	28.57
Access to Research Subjects	9	42.86	1	4.76
Collegial Support	(9)	(42.86)	(10)	47.62
Consultation & collaboration	8	31.10	0	0.00
Mentorship	1	4.76	2	9.52
Libraries	8	38.10	0	0.00
Assistance with Data Collection	(8)	(38.10)	(12)	57.14
Research/teaching assistants	4	19.05	11	52.38
Equipment	4	19.05	1	4.76
Physical Plant				
Offices and laboratories *	6	28.57	6	28.57
Time Allocations for Research	6	28.57	3	14.29
Illustrative Media Services	0	0.00	5	23.81

* Some respondents reporting resources for research in both necessary and desirable categories but differentiated by depth or amount of service.

Scholarly expectations

Expectations for research and scholarly productivity were present in the environment and were described related to the perceived mission, "thrust," or "climate" for research in that context. Several respondents described an earlier emphasis on teaching prevalent six to 10 years earlier in the setting but which had been replaced with expectations and rewards for research. Neophyte faculty members were described as currently being socialized into the researcher role. Contributions to the knowledge base of nursing and the transmission of this new knowledge were expected graduate faculty behaviors, especially with research-based programs and student expectations for faculty involvement in research. These expectations for scholarly productivity were described as currently in place in the environments and were supported with resources for attainment of the goal of productivity. One respondent described this process:

. . . there's clearly the expectation and the excitement that you will be doing research . . . And that is supported . . . They give you the instruments, the peers and the other kinds of resources so that you can do it.

On the Organizational Environment Form administrative respondents from six sites reported research expectancies for faculty which were in agreement with descriptions from the Established Nurse Researcher respondents. Research was required for promotion and tenure at all sites with some sites also requiring research for faculty appointment (83.33%) and retention (66.66%).

Administrative support

Administrative support for research was described by respondents as facilitation and reinforcement for scholarly productivity. School administrators provided this facilitation through provision of resources for pilot work, information on funding sources, and individual encouragement. Administrators were also described as providing reinforcement for research efforts through monetary and non-monetary rewards. Monetary rewards occurred with promotion, merit pay increases, provision of travel funds for presentation of the findings, and use of discretionary funds to assist with pilot studies. Non-monetary rewards were provided in encouraging and congratulatory comments in faculty meetings and on an individual basis. Several respondents described how their administrators made special efforts to congratulate them personally on accomplishments, whether for publications, awards, or research grants.

Workload allocations. Administrative support for incorporating research into faculty workloads was an area particularly facilitative to productivity. This was described as providing opportunities for teaching in research-related areas, consideration of credit loads, and adjustment of responsibilities, especially committee work, or providing resources at times when the researcher was heavily involved in a project.

In Batey's (1978) study on the structure and process of productive research environments at university schools of nursing, elimination of use of the term "release time" was recommended. Respondents were asked

how they felt about this recommendation. It was generally reported that release time was not available at their respective institutions. Respondents proposed that workload allocations for research involvement were more effective than release time, especially in settings facilitative to research. Release time, given for a certain period of time, was generally viewed as providing a dichotomy for research and teaching. As one respondent described, "[release time] implies that you're released from your other duties so that you can do research with the implication that research isn't part of your job." Respondents stated that it was more valuable to have "more continual time" but that release time may be needed in institutions where research is not the primary mission and where the facilities and workload allocations for research are not available. In the respondents' academic environments, administrative support and resources were present with workload allocations for research and the "freedom" to manage one's time and pursue research and scholarly endeavors.

Tangible resources

Environments were generally described by the Established Nurse Researcher respondents during the On-Site Interview as facilitatory with the resources available or the means to obtain these resources present in the environments. These resources included support staff and services, assistance with grantsmanship, consultation, physical space, continuing educational opportunities or travel money, equipment, and intramural funding. Environments were characterized from "rich" to "spartan" but the researchers could obtain resources at the school or university level, especially for small or pilot projects. Centralized

school of nursing research support units were available and useful with these projects and with the preparation of grant applications.

Tangible resources for research were reported on the Organizational Environment Form for six of the study sites. Financial resources available at the sites are illustrated in Table 32. Financial support through intramural and extramural sponsored research for School of Nursing faculty was reported as aggregate whole dollar amounts for the 1985 - 1986 Fiscal Year. Intramural monies awarded at four sites ranged from \$10,575 to in excess of \$1.5 million for the year with a median award of \$43,053 for the study sites. Extramural awards reported at five of the sites ranged from \$218,583 to \$1.2 million for the year with a median award of \$269,658. In addition, one school representative reported sponsored research as percentages with 30 percent from intramural funds and 70 percent from extramural funding sources. Four of the six sites reporting received Biomedical Research Support Grant funds in the past 5 year period. Aggregate amounts of Biomedical Research Support Grants were reported to the nearest whole dollar amount with the number of years of support specified. When amounts reported were divided by the number of years the support was received, the mean award for the six sites was \$8,048 ($n=6$, $s=13,806$) with a median of \$3,866.20 and a range from no support to close to \$40,000 per year.

Support staff and resources provided through administration for faculty research activities at the study sites are illustrated in Table 33. In addition, Research Support Units were available to assist

Table 32Financial Resources for Research at Study Sites

	n	Mean	Standard Deviation	Median
Intramural awards*	(4)	\$402,710.00	741,325.00	\$43,053.00
\$10,000 - 30,000	2			
\$30,001 - 60,000	0			
\$60,001 - 90,000	1			
Greater than \$1 million	1			
Extramural awards*	(5)	\$509,738.00	417,910.87	\$269,658.00
\$200,000 - 300,000	3			
\$600,000 - 700,000	1			
Greater than \$1 million	1			
Biomedical Research Support Grants	(6)	\$ 8047.78	13,806.30	\$ 3,866.20
No support grants	2			
\$3,000 - 6,000	3			
Greater than \$35,000	1			

* Aggregate amounts of sponsored research dollars received by faculty for Fiscal Year 1985-1986, reported to the nearest dollar.

** Biomedical Research Support Grant Funds divided by the period of years received for comparison purposes.

faculty with research projects at six (85.71%) of the sites. These specialized research support units within the schools of nursing have been available in the environment from one to 16 years with a mean and median age for the units of 8 years (n=5). All six support units have staff and faculty available to assist school of nursing faculty members with development and follow through on research projects.

Collegial support

Scholarly peers were an important part of the environment in providing an intellectual atmosphere. Collegial support was both psychosocial and substantive in nature. Psychosocial support was often provided by a particular group of colleagues, not necessarily those peers with the same research interests. Substantive support came from colleagues who usually had similar or related research interests and was provided through discussion, consultation, collaboration, and especially critique of manuscripts and grant proposals. Off-campus nursing colleagues provided both psychosocial and substantive support but these peers usually had a research focus similar to that of the respondents.

Non-nursing campus colleagues were described by respondents as interested and allowing opportunities for discussion. Utilization of opportunities with these campus colleagues was dependent on the nature of the research and the physical arrangement of the campus with some colleagues being more accessible than others. Respondents viewed nursing as commanding the same respect as other academic disciplines, especially other practice disciplines and the behavioral sciences.

Table 33

Resources Available for Faculty Research at Study Sites (N=6)*

	n	%
Computer Resources		
Microcomputers for research	6	100.00
Mainframe computer, faculty accounts	6	100.00
Consultation Services		
Design	6	100.00
Statistical analysis	6	100.00
Financial Support for Research	6	100.00
Library facilities and support services	6	100.00
Physical Space, Office Space	6	100.00
Sabbaticals	6	100.00
Secretarial Services	6	100.00
Research Assistants	5	83.33
Continuing Education Programs/Workshops	4	66.67
Supplies for Research Activities	4	66.67
Research Coordinator for Faculty	2	33.33

* Resources available for faculty use with research activities as reported by a representative of the administrative unit of the school of nursing from six of the study sites.

Examples of Successful Research

The PSR was utilized to collect data for all three research questions relative to research orientation, organizational, network, and productivity variables as illustrated in Table 7. Eighteen of the 20 studies reported had been awarded funding ranging from \$500 to \$1 million. Characteristics of the funded projects are illustrated in Table 34. Dissemination of the results of these studies was performed through publication (90%) and presentation of papers at professional meetings (95%). Specific dissemination characteristics of the example projects reported are indicated in Table 35.

The predominant methodology reported by the Established Nurse Researcher respondents was quantitative in 11 cases (55%), qualitative in two cases (10%), and a combined quantitative and qualitative approach in seven cases (35%). To assess if the predominant research methodology used with the successful project reported influenced how the respondents completed the PSR instrument Wilcoxin and median tests were done. There was no significant difference in the respondents responses to the 30-item scale of the PSR when qualitative versus quantitative methodologies were compared. In addition, no significant differences were apparent when qualitative and both qualitative and quantitative were combined and compared with those respondents reporting the predominant method used as quantitative.

Research Orientation with the Successful Project

Research habits were considered through Established Nurse Researcher respondents' descriptions on Part I of the PSR related to

Table 34

Funding Awards for Selected Successful Research Projects

Awards	Number of Studies*	%
Award Amounts, in dollars		
500 - 4,999	5	27.78
5,000 - 9,999	2	11.11
10,000 - 14,999	1	5.56
15,000 - 19,999	2	11.11
20,000 - 29,999	0	0.00
30,000 - 39,999	2	11.11
Greater than 40,000	3	16.67
Amount not reported	3	16.67
Award Sources		
Intramural Grants		
School of Nursing or University	8	44.44
Extramural Grants		
Federal		
Division of Nursing	6	33.33
National Institutes of Health	1	5.56
Title V Grant	1	5.56
Sigma Theta Tau	2	11.11
State	1	5.56
Grant Role		
Principal Investigator	14	77.78
Co-Principal Investigator	2	11.11
Investigator	2	11.11

* Percentages based on 18 of 20 studies where funding was awarded

** One project had funding from two sources

Table 35

Dissemination of Results for Examples of Successful Research Studies

	Number of Studies	%
Publication	(18 [*])	(90)
Book or Book Chapter	5	25
Monograph	1	5
Refereed Journal	14	70
Non-Refereed Journal	1	5
Other Publication Media	5	25
Best Reference for Findings^{**}		
Nursing Theory/Research Journal	5	25
Specialty Journal, Nursing	2	10
Book	3	15
Refereed Journal, not Nursing	6	30
State Report	1	5
Refereed Journal article, in press	1	5
No response	2	10
Presentation at Professional Meetings	19	95

* Publication of example studies occurred in 18 of 20 cases. Multiple specific sources represent dissemination of the findings. Percentages are based on the number of examples reported, n = 20.

** Dual publication information has been reported on one example where results were published in two sources to address different dissemination purpose and audience. Percentages based on the number of examples reported, n = 20.

the background and origination of the successful project. Following this, respondents described the projects' contributions to nursing knowledge.

Research habits

Purpose. Respondents were asked to state the purpose of the research example. The purpose was patient/client focused in 10 cases (50%) centering on patient/client behaviors, perceptions, and interventions. A nursing practice focus on clinical behaviors of nurses was evident in 4 cases (20%). The nursing profession in a broad range of environments was the focus in two cases (10%). Four additional studies were considered basic research (20%).

Development of the idea. Origination of the idea for the research project was described by respondents as following previous work in the area, whether in clinical practice or on the program of research. Several respondents described the use of analytic skills for reflection on a problem area after reviewing journal articles or attending conferences. Further development of ideas and research questions for the successful research projects followed reviews of the literature and discussion with colleagues or occurred during research on another project. One respondent described the development of research questions based on "reading, thought, and identification of conceptually sound variables which could be measured."

Attraction to the study. Established Nurse Researcher respondents were asked to describe what attracted them to the example study. Following analysis, three major themes were apparent: pioneering,

opportunity, and testing. The pioneer theme was apparent in descriptions of "investigations of an untapped source of information." One researcher described the example used as a "pioneering effort." Descriptions to further theory development and resultant changes in practice as the attraction were also categorized under this pioneer theme. Another major theme for attraction to the example was opportunity. Respondents consistently used the term, "opportunity," and conveyed an impression of personal interest in the problem with collaboration, design, or research extension opportunities in place. Testing, as a third major theme, was apparent in descriptions of the attraction to the project. Testing was used to study common nursing interventions, to redesign a flawed study, in evaluating a model, or in situations where variables were quantifiable and available for study.

Contributions to nursing

Part of the criteria for selection of successful research studies by the respondents was based on perceived contribution to nursing knowledge. To further describe the contribution, respondents were asked about acceptance and feedback from reviewers, the discipline, and from colleagues. Respondents reported acceptance and "positive" feedback from reviewers on the findings of the projects. Interest was reported from the field with opportunities for dissemination. Respondents further reported frequent citations of their work by others. Several respondents also reported numerous requests for reprints while another respondent stated, "nursing hasn't caught onto [requests for reprints] as [in] other fields."

Respondents were asked to indicate what they perceived to be the major contribution of their example study. There were three domains which emerged from their comments which can be further placed into a typology: pragmatics, discovery, and theory.

Pragmatics. The pragmatic domain was apparent through comments referring to nursing interventions, improvements in care, and relevance to practice. For example, one respondent reported that the research "contributed to nursing assessment" and helped identify those at risk for functional problems. Another respondent stated the contribution of "upgrading nursing care by sensitizing staff to [the] importance..." A third respondent reported the establishment of a means for a nursing activity in a specific population.

Discovery. The discovery domain occurred at a higher conceptual level and focused on extension of knowledge or the data base when such information had not previously been available. Discovery occurred through identification and description of factors to provide for a better understanding of a problem area. This discovery domain provided the foundation for interventions, broader than the pragmatic domain with the latter addressing specific problematic areas. An example of a response in this domain was the report of "extending knowledge base" in a specific area "for patients, families, and care-givers." Another respondent indicated the contribution of "identification of an area of concern for many patients that is appropriate for nursing interventions via alteration in the environment or enhancement of patient coping." The provision of "a data base which is comprehensive for one setting"

and a multidisciplinary perspective for the contribution are further examples reflective of this discovery domain.

Theory. The theoretical domain, as the third level in the typology, involved establishing relationships, testing of models, and the "elucidation" of theory. In this theoretical domain, specific theories were tested and further developed or new or more valid relationships were developed. The general theme for all responses in this theoretical domain was contributing to the knowledge base of nursing with the provision of information not known or previously supported with empirical data.

Organizational Contexts with Successful Research Projects

The three domains for research facilitation in academia from the interviews (expectations for research, facilitation through funding and resources, and a collegial atmosphere) were supported with the respondents' descriptions of the successful research project. On the PSR, respondents were requested to identify environmental influences that facilitated or hindered the research, in particular, roles, the organizational context, and the reward system.

Roles

Two domains emerged from the respondents' comments on facilitators and hindrances related to roles with the successful research project, faculty activities and colleagues.

Faculty role. Faculty activities were referred to as both facilitative and hindering to the research. Facilitation occurred through administrative support with encouragement and workload

allocations, teaching in the research area, resources like research assistants, and access to research subjects. At the same time, respondents described hindrances related to the faculty role with specific activities creating "role strain," like committee work and meetings, teaching responsibilities, and "multiple competing responsibilities." One respondent reported, "many role expectations can slow you down."

Colleagues. Collegial influences were mainly described as hindrances when colleagues were not similarly engaged in and committed to research. Another collegial hindrance in the environment was reported in the case of a faculty member who was overly competitive. With shared values for research with colleagues, facilitation occurred through collaboration and consultation for the division of labor and the provision of "complementary knowledge and experience."

Organizational context

Institutional and administrative support and encouragement for research along with resources for faculty in the environment were described by 70 percent of the respondents as facilitators for the successful research projects. Although 55 percent of the respondents reported no environmental hindrances, another 45 percent described inadequate time allocation for research (25%) or lack of specific environmental resources (20%). Environmental facilitation was also reported with access to subjects and opportunities for dialog with colleagues.

Reward system

The reward system for successful research projects was described as both intrinsic and extrinsic with reinforcement for research. Intrinsic rewards of personal achievement, "interpersonal rewards with [the] co-researcher," and making a contribution to nursing were described related to their nursing careers. Extrinsic rewards in the immediate university and school environments provided reinforcement for research activities through promotion, merit salary increases, intramural funding, and encouragement. Ninety-five percent of the respondents reported no hindrances from the reward system. The one hindrance identified was described as occasionally getting "mixed messages" in terms of what was rewarded in the university environment.

Networking for Successful Research Projects

Communication with colleagues was of interest as a network variable. Respondents were asked to describe linkages/networks used to interest others in using or extending the research findings. The major network opportunity utilized was presentation of findings at meetings or conferences. Other opportunities used by the respondents included consultation, dissemination through publication in journals and organizational newsletters, and public media. Network utilization reported by the respondents focused on getting the results to colleagues and seeking opportunities for dialog concerning the implications of the findings. Membership in clinical specialty and research subgroups of organizations were identified as useful by the respondents.

Efforts toward dissemination of the findings

The respondents reported dissemination mainly through publication and presentations at local, regional, national and international conferences and meetings. Other methods for dissemination of successful research included consultation, classroom teaching, radio and television media coverage, and the provision of testimony before legislative bodies.

Efforts toward utilizing the findings

Respondents reported utilization efforts mainly through providing the empirical data for further replication, validation, or extension. Providing this empirical data to others was done through consultation, publication, teaching students, and discussion of findings and their implications with colleagues and clinicians in practice settings. Several respondents described the actual use of the findings in their own clinical or educational practice. Methods of persuasion used to interest others in using or extending the findings occurred through the efforts for dissemination. Discussion with colleagues was the main method used for persuasion. One respondent reported, "my efforts tend to focus on interpreting my work to interested parties rather than making them 'buy' my idea."

Utilization of the findings from successful research projects was demonstrated with replication and spinoff studies. Further research has resulted from the projects reported by the respondents as examples of successful research as illustrated in Table 36. Replications of the studies have been done by both respondents (35%) and by other

researchers (70%). Spinoff studies based on the successful research project were also reported as done by both the respondents (68.42%) and other researchers (65%). Only four of the studies (20%) used as examples of successful research have not resulted in replication or spinoff studies but one spinoff study was in the planning phase and another was being considered by the researcher. Another respondent reported that the example study used had already been a spinoff from an earlier study with the current example project for successful research in progress. The fourth respondent who reported no replication or spinoff studies from the example project stated that other studies had been done but that they were "less exhaustive."

Productivity with Successful Research

Perceptions of research success were assessed through responses on Part II of the PSR. Respondents rated the successful research study on a 30 item, five-point likert scale. Total mean score on the PSR was 72.760 ($n=20$, $s=12.275$) with a median of 71.923. The reliability measure for the 30 scaled items yielded an alpha of .633. Three items on the PSR were treated as reversals. Descriptive statistics on individual items and the total instrument are displayed in Table 37. In the following section, responses to individual items will be described related to the respondents' perceptions of successful research along with application of the group responses based on the four themes proposed by Campbell et al. (1983).

Table 36

Further Studies which have Evolved from the Successful Research Project

	Self				Others			
	n	%	Mean	Median	n	%	Mean*	Median
Replications	20	35	1.00 (s=0.55)	0.00	20	70	1.18 (s=1.09)	1.00
None	13				6			
1	5				5			
2-3	1				6			
4	1				0			
Number unknown	0				3			
Spinoff Studies	19	68.42	1.61 (s=1.46)	2.00	20	65	1.20 (s=1.61)	1.00
None	6				7			
1	2				4			
2	6				1			
3	1				1			
4	3				1			
5 or more	1				2			
Number unknown	0				4			

* Calculation of means and standard deviations for studies done by other researchers based on the respondents who identified an amount for replications (n = 17) or spinoff studies (n = 16) resulting from the successful research project.

Table 37

Descriptive Analysis for Items on the Part II of the PSR

Question	n	Mean	Standard Deviation	Median
1	19	1.3158	1.6348	1.0000
2	20	2.5500	1.5035	3.0000
3	20	2.4500	1.6376	3.0000
4	20	1.5000	1.5044	2.0000
5	20	2.1000	1.4105	2.0000
6	20	2.5500	1.5035	3.0000
7	20	1.4500	1.4681	1.0000
8	20	2.6000	1.4290	3.0000
9	20	2.3500	1.0894	2.0000
10	20	1.9500	1.7006	1.5000
11	20	3.0500	1.1910	3.0000
12	20	2.1000	1.0208	2.0000
13	20	2.7000	1.4546	3.0000
14	19	1.6842	1.4927	1.0000
15	20	3.7000	0.5712	4.0000
16	19	3.0526	1.3529	4.0000
17*	17	1.5294	1.6627	1.0000
18*	16	5.0625	1.8428	4.5000
19*	19	5.3158	1.4927	5.0000
20	19	6.7368	0.6534	7.0000
21	20	1.8000	1.3992	2.0000
22	20	1.5000	1.5044	1.0000
23	20	0.8000	0.9515	0.5000
24	20	1.1500	1.3089	0.5000
25	20	2.6500	1.4965	3.0000
26	19	1.8947	1.6632	2.0000
27	19	0.4211	1.0174	0.0000
28	19	2.0000	1.5986	2.0000
29	19	2.0000	1.5986	2.0000
30	20	3.2000	0.6959	3.0000
Total	20	72.7603	12.2755	71.9231

* Questions scored as reversals.

Table 38Correlation Matrix for PSR Items with Little Relationship to Examples of Successful Research

Items	1	7	22	23	24	27
1	1.0000					
7	.2138	1.0000				
11	.3000	.4588*	1.0000			
23	.0928	.6012**	.6789**	1.0000		
24	-.1676	.0811	.4787*	.5331*	1.0000	
27	.1525	.5379*	.3790	.5637*	.2839	1.0000

*Spearman correlations significant at $p < .05$.

**Spearman correlations significant at $p < .01$.

Little relationship to the successful research projects

Means and medians were compared for individual items on the PSR. The means and medians for six items were less than or equal to 1.50 with the group indicating little relationship to the examples of successful research. These six items referred to replication studies or testing to negate prior relationships or competing theoretical models. Spearman correlations were done on the six items since they were ranked from zero (no extent) to 4 points (great extent). As illustrated in Table 38, significant correlations ($p < .05$) were demonstrated between item 7 (testing of competing theories or models

about a phenomenon) and three items to negate previously accepted relationships. Therefore, the successful research projects rarely were based on research to further test previously established relationships.

Items identified as related to successful research

Respondents reported a relationship to successful research projects on 10 items with means of greater than or equal to 2.45 and medians of 3.00 or greater, excluding reversals. These 10 items were concerned with the development of new knowledge through new variables or variable combinations, improvements in methodology, personal interest, significance of research findings, discovery of the subgroups of a particular construct, and clarification and applicability of a problem to nursing practice, education or administration. Although these 10 items referred to the development of new knowledge, no significant correlations were revealed between items.

Themes for successful research

Campbell et al. (1983) proposed four themes of significant organizational research, (1) methodological rigor, (2) importance to the discipline, (3) personal interest and motivation, and (4) real world implications. Respondents' perceptions of successful research were assessed related to these themes.

Methodological rigor. Campbell et al. (1983) proposed a theme of methodological rigor for significant research through systematic argument, sound and complex methods, and use of variables that were quantifiable as opposed to expedience which characterized the "not-so-significant research" (pp. 105-106). Five items on the PSR

were concerned with the theme of methodological rigor for successful nursing research. Respondents rated the extent to which the example study tested previously established relationships and used new and quantifiable variables and/or improved methodology. Descriptive statistics for these five items are illustrated in Table 39. Three items yielded means beyond 2.40 and medians of 3.00. A theme of methodological rigor through improved methodology and use of quantifiable or new variable combinations continued to be present with successful research. Testing previously established relationships through replications was not a characteristic of methodological rigor and was reported less frequently with successful research (mean = 1.3158, median = 1.0000). Adoption of a method developed in another field was also reported less frequently with these examples of successful research (mean = 1.50, median 2.00).

Importance to the discipline. Contributions to the knowledge base through research on relevant, controversial, or theoretical problems was the basis for the theme of importance to the discipline with significant research (Campbell et al., 1983). Fourteen items on the PSR were based on the theme of importance to the discipline as illustrated in Table 40. This theme of importance continued to be present with the examples of successful research, especially for investigating a controversial topic or discovering the component parts of a phenomenon. Of moderate concern with successful research were identification of new variables and relationships and the combination of ideas from two or more fields.

Table 39PSR Items on Methodological Rigor

Item	n	Mean	Standard Deviation	Median
1	19	1.3158	1.6348	1.0000
2	20	2.5500	1.5035	3.0000
3	20	2.4500	1.6376	3.0000
4	20	1.5000	1.4044	2.0000
11	20	3.0500	1.1910	3.0000

Table 40PSR Items on Importance to the Discipline

Item	n	Mean	Standard Deviation	Median
5	20	2.1000	1.4105	2.0000
6	20	2.5500	1.5035	3.0000
7	20	1.4500	1.4681	1.0000
10	20	1.9500	1.7006	1.5000
21	20	1.8000	1.3992	2.0000
22	20	1.5000	1.5044	1.0000
23	20	0.8000	0.9515	0.5000
24	20	1.1500	1.3089	0.5000
25	20	2.6500	1.4965	3.0000
26	19	1.8947	1.6632	2.0000
27	19	0.4211	1.0174	0.0000
28	19	2.0000	1.5986	2.0000
29	19	2.0000	1.5986	2.0000
30	20	3.2000	0.6959	3.0000

Infrequently successful research was reported to provide different explanations for accepted relationships or phenomenon.

As illustrated in Table 41, several significant correlations ($p < .05$) were apparent in this subset of questions for importance to the discipline. As discussed previously, the item on testing competing theories or models was positively correlated with items relating to discovery of different explanations or relationships for phenomenon. In addition, unification of phenomena was related to the discovery of different relationships. Resolving a controversial issue in nursing was negatively correlated with with the combination of ideas from different fields ($r = -.5148$, $p = .0241$, $n = 19$) perhaps with the successful research studies focusing on the discipline itself.

Personal interest and motivation. Campbell et al. (1983) reported that significant research was based on personal interest and motivation for the project rather than on a potential for publications or on research of topics acceptable to the discipline. A theme of personal interest and motivation was considered with six items on the PSR. Descriptive statistics on this subgroup are displayed in Table 42. Interest and motivation for the project were reported by respondents with successful research. Involvement in research based on the potential for publications was scored as a reversal with respondents demonstrating less applicability for this with successful research. Campbell et al. (1983) reported that expedience or convenience was a characteristic of "not-so-significant research." Unlike significant organizational research, convenience with successful research studies

Table 41

Correlation Matrix for FSR Items on Importance to the Discipline

Item	5	6	7	10	21	22	23	24	25	26	27	28	29	30
5	1.0000													
6	-.2765	1.0000												
7	.2172	.3088	1.0000											
10	-.2623	.1324	.1084	1.0000										
21	.2905	.2698	.6108**	-.0922	1.0000									
22	.2134	.0580	.4588*	-.0919	.2659	1.0000								
23	.2145	.3080	.6012**	-.0720	.2279	.6789**	1.0000							
24	.2557	.0534	.0811	-.3453	.1170	.4787*	.5331*	1.0000						
25	.0138	-.1061	.1271	.1874	.0140	.4140	.3340	.0677	1.0000					
26	.1120	-.0893	.4712*	-.1684	.4400	.2258	.1026	-.0824	-.0623	1.0000				
27	.3567	.0325	.5379*	.2779	.1855	.3790	.5637*	.2839	.0013	.2116	1.0000			
28	.4137	-.3563	.2494	-.2661	.2752	.0477	-.0537	-.0510	-.0140	.2126	.0315	1.0000		
29	.5148*	.5517*	.1374	.0912	.0847	.0150	.2870	.3661	-.1165	.1035	.2696	-.3529	1.0000	
30	-.1425	.4167	.0636	.2459	.1199	-.2424	.0719	.0058	-.2429	.0055	.0842	.0387	.4459	1.0000

* Spearman correlations significant at $p < .05$.** Spearman correlations significant at $p < .01$.

Table 42PSR Items on Personal Interest and Motivation

Item	n	Mean	Standard Deviation	Median
8	20	2.6000	1.4290	3.0000
9	20	2.3500	1.0894	2.0000
12	20	2.1000	1.0208	2.0000
13	20	2.7000	1.4546	3.0000
14*	19	1.6842	1.4927	1.0000
19	19	5.3158	1.4927	5.0000

* Scored as a reversal in the scale.

Table 43PSR Items on Real World Implications

Item	n	Mean	Standard Deviation	Median
15	20	3.7000	0.5712	4.0000
16	19	3.0526	1.3529	4.0000
17*	17	1.5294	1.6627	1.0000
18*	16	5.0625	1.8428	4.5000
20	19	6.7368	0.6534	7.0000

* Scored as reversals in the scale.

was reported by a moderate amount of respondents for successful research (mean = 2.35, median = 2.00).

Commitment to dissemination was apparent in response to the item suggesting abandonment of dissemination, if the findings were of questionable value. Since respondents rarely reported publication potential as a consideration for involvement in successful research, dissemination of findings may need to be considered important to nursing for the report of negative as well as positive empirical findings.

Real world implications. Campbell et al. (1983) reported that significant research was characterized by useful research problems with implications for application in the real world in a wide variety of situations (pp. 105-106). Table 43 contains descriptive data from five PSR items which addressed the theme of implications of the successful research project for nursing practice. A majority of the 20 respondents (mean = 3.70, s=.5712, median = 4.00) indicated that findings from the successful projects were applicable to nursing practice, education, or administration. Respondents also reported that findings were significant, beyond that defined through the research design (mean = 3.0526, s=1.3529, median = 4.00). Three of the items in this group of questions related to issues of ethical concerns despite benefits and informed consent. Rarely was the successful research project characterized by ethical concerns, especially pain or discomfort to patients. The two items addressing ethical concerns revealed significant correlations ($-.7145$, $p=.0019$, $n=16$). Several

respondents noted on the instrument that there were no ethical concerns associated with the successful research project.

Reactions of Respondents to Initial Findings

A 49-page aggregate report of findings from the Pre-Interview Profile and the On-Site Interview was mailed to the 21 established nurse researchers as a validity check to assess for adequate representation in the data. Twelve established nurse researchers (57.14%) from six academic environments completed the two-page short answer reaction form. All twelve respondents reported that their perceptions had been accurately presented in the data. No substantive changes in the report were recommended. Two of the respondents suggested summary statements on established nurse researchers and one respondent suggested the identification of a "single, most influencing factor on career, as perceived by respondents." Respondents declined the opportunity to provide further information or include a minority report. Several respondents commented on the similarities among established nurse researchers which could be used as a guide to stimulate others in research goals.

Through this validity check on the analysis of the pre-interview and interview data, respondents supported the domains and themes presented in the data reported earlier in this chapter. Generally from the responses received in this final stage of data collection, established nurse researchers supported the analysis of the data provided by the group on their individual and environmental characteristics.

Summary

Findings from the study instruments have been presented in this chapter. Individual and environmental characteristics of the respondents and their academic contexts have been illustrated under personal, professional, positional, productivity, network, and research orientation variables. Domains and themes were drawn from the qualitative data and illustrated. Qualitative and quantitative findings from the PSR were used to illustrate characteristics of successful research examples described by the respondents. Established nurse researcher respondents' reactions to an aggregate report of the data from the Pre-Interview Profile and the On-Site Interview were described and used as a validity check for the qualitative findings. In the following chapter, the findings for each of the research questions will be described in relation to the study model.

CHAPTER V DISCUSSION

The primary purpose of this research has been to determine individual and environmental characteristics of established nurse researchers related to research. In this chapter, the theoretical model will be discussed in terms of the study findings. Following this, findings for each research question will be presented to profile the individual and environmental characteristics of established nurse researchers.

A Model for Nurse Faculty Research Productivity

Established nurse researchers are influenced by the four environments of college/school, university, discipline, and society which in turn affect successful research outcomes and lead to increments in knowledge for the discipline of nursing. In the following section, antecedent and outcome variables identified for the study findings are discussed in terms of their fit in the theoretical model (Figure 2). For further description of the model, refer to Chapter I.

Goals and Values Subsystem

The goals and values subsystem influences research and scholarly productivity through positional, research orientation, and productivity variables. Positional variables of rank and tenure are placed primarily in this subsystem as part of the expectations in school

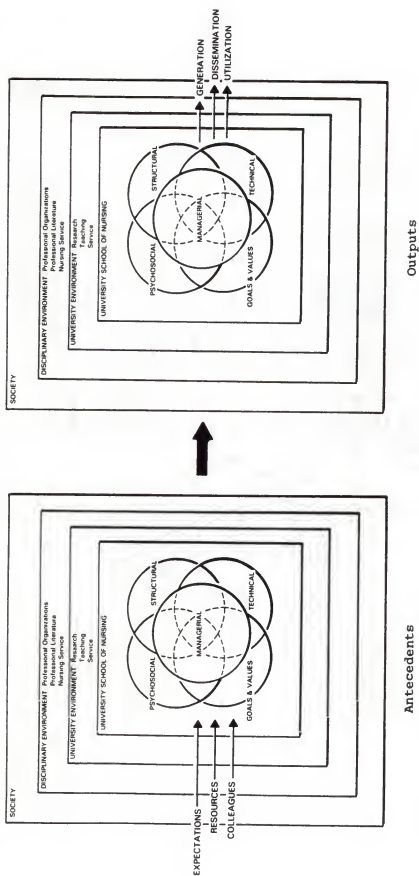


Figure 2. A model for nurse faculty research productivity.

Note. From *Organization and Management* (p. 109) by F. E. Kast and J. E. Rosenzweig, 1979, New York: McGraw-Hill. Copyright 1979 by McGraw-Hill. Adapted by permission.

and university environments for continuation in the system. Research and scholarly productivity are part of the means by which individuals attain this value or goal. Research orientation is apparent with influences from perceived importance and preferences for research and contributions to nursing. Goals and values from society, discipline, university, and school provide the foundation for shared values with individual researchers. Within this subsystem, two predominant themes that related to productivity were the importance of research to the discipline and research that addresses real world implications.

Psychosocial Subsystem

The psychosocial subsystem interrelates with the other four subsystems through people. Personal factors are one component of the researcher role including those background influences, antecedents and essential characteristics needed for research. Individuals enter the system with internalized values, motivation, attitudes, and preferences. External to the organizational environment, families provide individuals with psychosocial and tangible support for their involvement in research. Educational preparation and personal support external to the organization or discipline can occur through these personal variables and affect role performance in research. Role attributes needed by researchers reflect the themes of character traits, knowledge, and skills for generation, dissemination, and utilization of research. Utilization of research in the context of the psychosocial subsystem occurs mainly through replication and extension of the research.

Positional variables also influence the research role in the psychosocial subsystem. Integration of role responsibilities was described by established nurse researchers related to teaching, research, and service or administrative activities. The negative aspect of positional variables influencing roles is competing role responsibilities which established nurse researchers have described as hindrances to successful research. One of the themes of successful research by established nurse researchers was their interest in and motivation for research which related to both research roles and the status assigned to research activities.

Status gained through research is promoted through personal, professional, productivity, and research orientation variables. The individual researcher has been affected by interpersonal, educational, and environmental influences on career and scholarly development that have taken place prior to entry into the system. Integration of teaching and research roles are necessary for the demonstration of professional credibility of the faculty in their positions through the status assigned to them that is derived from nursing research activities. Through career age, the individual has adopted values for scholarly productivity and continues to operate within the role expectations and resultant status received through the reward system of the university. Further status is obtained through contributions of successful research outcomes to the discipline of nursing.

Structural Subsystem

Formalized channels of communication, interaction, and job responsibilities are provided through the structural integrity of the

subsystem. Policy, availability of resources, and channels of command for obtaining resources for research must be considered with the structural subsystem. The structural subsystem influences research and scholarly productivity through organizational and research orientation variables. The organization of the school and characteristics of programs are one part of this structural subsystem that affect the resources available for successful research outcomes. The leading academic environments studied were characterized by large, established graduate programs in nursing. Faculty and student body sizes related to teaching and service functions are considerations with this structural unit. Intramural resources in the formalized structure of this subsystem occur through the expectation system, research support opportunities, and the collegial atmosphere. At times, the structural subsystem may be bypassed when the individual researcher views the use of more informal channels in the environment as more efficient or useful for certain research activities. One hindrance to successful research which can occur relates to a potential situation where an excessive amount of administrative controls are in place. These were rarely described in the environments studied but occasionally were referred to as "hoops to jump through" or the excessive paperwork and channels to negotiate when attempting to access resources.

Technical Subsystem

Accumulated knowledge refers to the knowledge base of the researcher as well as the substantive support through consultation and collaboration necessary for accomplishment of successful research

outcomes. Resources are provided from the environments, controlled through the structural subsystem, and coordinated by the managerial subsystem. Knowledge of these environmental resources and methods for obtaining access is needed by the researcher. Professional, positional, research orientation, and productivity variables are the components of this subsystem. Accumulated knowledge is demonstrated through advanced preparation, research, publication and work habits, and methods for continued development of individual scholars. Resources are identified and utilized by the researcher as appropriate to a particular scholarly endeavor. This subsystem focuses on the use of these resources rather than availability without application. Resources include not only the physical ones but also intangible resources with consultation and collaboration opportunities to further add to the accumulated knowledge of the individual researcher.

Managerial Subsystem

Administrative support and the provision of tangible resources for potential use and the reinforcement for successful research outcomes comprise this managerial subsystem. Managerial support is demonstrated through the expectation and reward structures of the environments, the funding opportunities, tangible resources provided, and workload allocations for research as part of the faculty role. Managerial support is also provided through Research Support Units located in the school environments. Managerial support from the school environment occurs with some research projects. In the case of larger, extramurally funded projects, the managerial focus may change to the

university-wide office for sponsored research and/or the research team with resources, rewards, and coordination of activities external to school structure. Established nurse researchers also described the importance of motivation when managerial resources were insufficient. Given a motivated and committed researcher, research and scholarly productivity are made more difficult but are not totally inhibited with a dysfunctional managerial system for research activities. In the absence of managerial subsystem support, established nurse researchers focused on the psychosocial and technical subsystems for resources for research.

Support for research is seen through the "valuing" of nursing research. In academia, this research support can be seen in the domains of research expectations, facilitation through funding and resources, and in the provision of a collegial atmosphere. University and school environments provide inputs to the managerial subsystem in these domains. The discipline of nursing provides inputs with opportunities for stimulation, sharing, and critique through professional societies and organizations and with reinforcement by validation of efforts through peer review, funding and resources, extension of the research, and dissemination opportunities. Expectations or requirements influence the support needed for research and scholarly productivity. These inputs provide the basis for the resources, rewards, and integration of activities directed through this subsystem.

Environments

The school or college of nursing unit provides the resources for knowledge development. These resources include individual researchers along with facilitators for research activities. The five subsystems are contained within this school environment providing the resources for the goals and values of the system, psychosocial relationships and characteristics, structural integrity, technical foundations, and managerial support. This school environment provides for roles in research for faculty members, individually and collaboratively, within the school or nursing unit. Linkages among colleagues in the generation, dissemination, or utilization of research findings promote the transfer of knowledge to other practitioners and society to benefit ultimately the health care of consumers of nursing knowledge and services.

In the university environment, role inputs through requirements for scholarly productivity in mission statements, facilitatory resources, and rewards in the promotion, tenure and merit systems communicate values and expectations to the school environment and the subsystems. Environmental facilitation for research has been reported in the domains of (1) scholarly expectations/requirements, (2) administrative support, (3) tangible resources, and (4) collegial support. These methods for facilitation of research activities allow for outputs to the other environments. Linkages are provided through intramural and extramural collaboration with further provision of resources like long distance phone services, travel money, and intramural grants.

The next environment of the system is the nursing discipline. Goals and values for research generation, dissemination, and utilization are transmitted to the system environments, especially by nursing's scholarly subgroups. Utilization of research is promoted through dissemination of the research findings. The main variables in the disciplinary environment are communication with colleagues, mentorship, professional societies and organizations, and scholarly journals for continued development, dissemination, and demonstration of scholarly productivity in research-based refereed journals preferred by established nurse researchers. Linkages are provided in networking activities with colleagues through these variables.

Patients and health care consumers are the focus of the societal context with generation and dissemination of knowledge from the subsystems and other environments aimed at the improvement of health care. Research problems for nursing are identified in this context based on the theme of real world implications for successful nursing research. This context provides the environment for the ultimate goal of utilization of research and improved care to consumers.

Findings for Research Questions

Research Question One

The first research question concerned individual characteristics of established nurse researchers and was stated as follows:

What precursors (antecedents) and individual characteristics do established nurse researchers identify as contributing to and influencing successful research outcomes and other scholarly endeavors?

Three themes were apparent in the established nurse researchers' comments on antecedents and essential characteristics for research, character traits, knowledge and skills.

Character traits theme

Respondents described individual character traits as both antecedents for research and scholarship and as essential characteristics for ongoing research. This theme contained the following six domains of traits: interest, commitment and motivation, perseverance, creativity, independence, and ethics or a sense of honor. Character traits are those individual attributes which operate through the psychosocial subsystem for successful research outcomes.

Character trait domains. An interest in knowledge and contribution to the knowledge base was the first character trait of the nurse researcher. As an antecedent there must be an interest in asking questions and finding answers to important problems. This interest included an apparent enjoyment with research. As an essential characteristic, interest became an enthusiasm for research to the point of internalizing research into daily activities. Research must be ongoing whether in the less visible reflective time or in the more apparent involvement in research activities.

Interest was supported through a sense of commitment and motivation for the research. As an antecedent, this commitment and motivation were the ways in which the individual directs time and effort into research projects and activities. Commitment and motivation allow for establishing priorities directed to research and

sustaining the interest in research despite the time and effort needed for the work. As an essential characteristic, commitment and motivation were directed toward the program of research for maintaining the ongoing interest in logically extending knowledge and contributing useful information for utilization by practitioners, consumers of health care, and other researchers.

Commitment and motivation were sustained through perseverance as both an antecedent and an essential characteristic of the researcher. Perseverance was described as the endurance, persistence, patience, and tenacity, especially when problems arise. The individual must be able to persist with complex tasks and not become easily discouraged or defeated. This was described as an essential characteristic for the nurse researcher, especially related to the research project. The researcher must be able to anticipate problems during the research process and be able to deal with them. Perseverance was also described as a sense that, in the long run, the study will provide valuable information along with problems that arise during the research process.

Creativity was the fourth domain of character traits. As an antecedent, creativity was needed to envision the research problem along with the broader context. As an essential characteristic, creativity provided direction to the research program for further extensions in order that contributions be made to nursing science. Part of creativity involved the use of analytic skills necessary for the generation of research.

Independence was described as a fifth character trait. As an antecedent, independence was necessary for the generation of ideas, for decision making during the research process, and for accountability for the project and its outcomes. Independence, as an essential characteristic for the nurse researcher, required risk taking and courage. The dimension of peer review required this courage as the research and the researcher are opened to scrutiny of merit with either the grant application or dissemination of the results.

Ethics, or a sense of honor for maintaining the scientific integrity and quality of the project, was described as a sixth character trait for the researcher. The basis for this sense of honor was described as an antecedent attribute needed by the nurse researcher. This sense of honor is retained as an essential characteristic in order to maintain the integrity of the data as well as the entire project for successful research outcomes and for ultimate utilization.

Attributes of established nurse researchers. Evidence of these character traits was considered with respondents' descriptions of career influences mainly through interpersonal and family experiences. Family, relatives, teachers, mentors, colleagues, and deans were reported to have provided influences on the early development of approximately 81 percent of the established nurse researchers.

Respondents reported influences from their families of orientation and procreation. Creativity and discussion were encouraged in the family circle. Parents of one-third of the respondents stressed

educational accomplishments. Approximately 52 percent of the respondents were firstborn children with another 14.29 percent reporting role reversals with the older sibling. The majority (61.90%) of the respondents were currently married with spouses described as supportive to their commitment and interest in research. Although only 50 percent of the respondents indicated current dependents other than spouses, no negative influences on research careers were described related to children. Perhaps some of this can be attributed to descriptions of spousal assistance with home responsibilities (64.29%).

Issues reported from education, practice, and society influenced the career development of one-third of the respondents. From career development to a focus on research, influences were mainly from interactions with colleagues, mentors, teachers, faculty, and deans as reported by approximately 58 percent of the established nurse researchers. Influences in the areas of educational and environmental factors related to the perceived strength of their educational preparation, opportunities for research, expectations in the environment, and the reward system were described by one-third of the respondents.

Personality influences related to career development were reported by 38.10 percent of the respondents and included perceptions of early job satisfaction or career choices made and the desire for independence, control, and responsibility. Further influences on development of their research careers related to early job satisfaction, the interest and desire to do research, and the need to

demonstrate credibility following doctoral education were reported by approximately 48 of the established nurse researchers.

The respondents were well established in their academic careers. The mean career age for the group was 12.80 years. Career age was indicative of their work experience in academia with group means of 2.05 career moves and 8.55 years at their current locations. In addition, 42.86 percent of the established nurse researcher respondents held a variety of administrative positions in the school of nursing. Commitment to career and research efforts and independence were evident in the work habits of respondents. The mean number of hours worked per week for the group was 59.65 with 19.50 hours spent in research activities, including writing for publications and grants and providing consultation on research. Established nurse researchers also spent a mean of approximately 45 percent of their time working alone. Interest, commitment and motivation, perseverance, creativity, independence, and an ethical sense of honor were further demonstrated by respondents in their research preferences, authorship preferences, and devotion to their individual programs of research. Development and continuation of programs of research were described according to three themes, inner motivation, preferences, and productivity. The theme of inner motivation provided evidence of established nurse researchers' possession of the character traits with their descriptions of enjoyment, satisfaction, involvement, and concern for quality and making a contribution through their respective programs of research. Interest, educational background, and clinical practice background were

described by respondents as having influenced their preferences for research in the areas of fundamental processes and practice. These interests and career influences provide further evidence of interest, commitment and motivation, perseverance, and creativity as attributes of established nurse researchers.

Knowledge theme

The second theme for antecedents and essential characteristics for the nurse researcher focused on knowledge in three domains, the researcher's knowledge base, opportunities for learning, and the ability to seek help when needed. Individual characteristics related to the knowledge theme operate through the technical subsystem for successful research outcomes.

Domains of knowledge. The first domain concerned the knowledge base of the individual on both substantive and methodological issues, particularly related to research. Substantive and methodological knowledge for research as an antecedent was acquired predominantly during graduate education. Since respondents reported that doctoral education is focused on the beginning, not the accomplished researcher, a knowledge base through a strong doctoral program was the desired antecedent. As an essential characteristic for the nurse researcher, a preexistent knowledge base is needed along with current substantive knowledge for the program of research.

Opportunities for continued learning served as both an antecedent and an essential characteristic for the researcher to supplement the researcher's knowledge base. As an antecedent, opportunities for

continued learning focused on the appreciation for acquiring new information and skills to build on the knowledge base. As an essential characteristic for the researcher, opportunities for continued learning were directed at informational needs and problem solving related to involvement in current and planned research projects.

Humility, or the ability to recognize when there was a need for seeking help or consultation, was the third domain of knowledge as antecedents and essential characteristics for the researcher. The antecedent sense of humility was directed at recognition of weaknesses and seeking resources to augment the knowledge base. As an essential characteristic, there was a need for the knowledge or awareness of when seeking consultation and collaboration on the research project was appropriate. Actively seeking peer review for merit of research activities or findings was a component of this knowledge domain.

Knowledge accumulation by established nurse researchers.

Established nurse researcher respondents contributed a broad background to the group through their doctoral preparation in a variety of disciplines. One-third of the group had earned doctorates in nursing. Respondents generally reported their perceptions of a strong educational background. Postdoctoral work was accorded a positive value with the opportunity to broaden or practice skills, solidify research interests, be relieved of workload responsibilities, gain experience in research, and/or to work with a mentor. The value of postdoctoral education was further supported by the fact that 47.62 percent of respondents had done either formalized postdoctoral programs

(14.29%) or self selected studies (33.33%). In addition, 29 percent of the established nurse researchers reported the desire to do a formal postdoctoral program in the future.

Respondents demonstrated substantive knowledge through their research programs and methods for continued development of research expertise. A variety of specialty areas was represented in the clinical practice backgrounds of the respondents, with these specialties often reflected in their programs of research. Self-selected study was used by established nurse researchers for continued development of research expertise based on perceived personal needs related to a current research project or interests in a particular topic. The methods used for development included reading (73.68%), taking or auditing courses (57.89%), attending conferences, meetings or seminars (52.63%), seeking (47.37%) or providing (52.63%) consultation, networking with colleagues (15.79%), continuing ongoing research in the area (15.79%), and writing for publication (5.26%).

Collegial linkages or networking activities provided the opportunities for consultation when help was needed on a topic or project. Respondents reported current and projected linkages with colleagues for consultation and collaboration on a certain area of interest. One example of this was reflected in established nurse researchers' descriptions of different methodologies which they wanted to implement on a specific project or to develop more skill in and the colleagues they planned to contact for consultation or direction.

Skills theme

The third theme of antecedents and essential characteristics for the nurse researcher contains the skills necessary for successful research outcomes. Applicable through the psychosocial and technical subsystems, the skills theme contains four domains, mental abilities, collegiality, articulation skills, and organizational skills.

Domains of skills. Mental abilities were described as an antecedent for logical and analytical thought on a research problem. These mental abilities provided the researcher with the cognitive basis for working with abstractions and relationships. Mental abilities for working with theoretical and empirical relationships were essential for ongoing research.

Interpersonal skills in collaborative relationships was the second domain of antecedent and essential skills for the nurse researcher. These antecedent interpersonal skills involved the ability to function effectively in collaborative relationships. As essential characteristics, interpersonal and leadership skills are needed for linkages through collaboration and consultation.

Organizational skills were both antecedents and essential characteristics for the nurse researcher. As antecedents, organization skills focused on attention to detail and the discipline needed for the research process. Organizational skills specific to research habits became essential characteristics of the nurse researcher. These organizational skills provided for efficient and effective use of time and other resources for the success of research projects.

Articulation skills were described as antecedents by some respondents but more so later as essential characteristics of the individual nurse researcher. Communication skills in both speaking and writing are essential for the generation, dissemination, and utilization of research. In the generation phase, articulation skills are needed to obtain monetary, physical, and interpersonal resources for the project. Communication skills for presentations, publications, and informal discussions are requisites for dissemination of the findings to promote utilization. Therefore, articulation skills are essential to communication of the results as well as to convince others of the merit of the research.

Skills of established nurse researchers. Respondents described early childhood and educational experiences as fostering the development of mental abilities. Inclusion in family discussions and encouragement of mental curiosity and reading were described by respondents. Later, early professional experiences in baccalaureate and master's degree programs offered specific opportunities for the respondents in development of skills and abilities. Respondents described work in special programs or projects or early experiences with mentors which were intellectually stimulating and which lead them to further education and a sustained interest in research.

Use of mental abilities was apparent in established nurse researchers' descriptions of the origin and background of studies used as examples of successful research. Development of research ideas was described following review of the literature or reflection on the

topic. Attraction to the project in the three themes of pioneering, opportunity, and testing also reflected the analytic skills applied to research for contributing knowledge to nursing science.

Collaborative efforts on research ideas or projects were discussed by established nurse researchers. Interpersonal skills were described in the provision of leadership to the research team and in collaborative and network activities. A discussion of interpersonal linkages used by the respondents for successful research outcomes are addressed in the discussion for research question number three, later in this chapter. Collegiality was also reflected in the publication preferences of established nurse researchers. Co-authorship and multiple authorship emerged with involvement in larger, collaborative projects. These collaborative projects resulted in increased opportunities for publications through commitments to dissemination of the work. Although authorship for these projects was a collaborative effort, limiting the number of writers to one or a small group was recommended and required interpersonal skills with the group.

The actual development of organizational skills was rarely described although some respondents described early family experiences in problem solving which potentially assisted in this area of skills development. Mentors were described by several respondents as assisting in research design during doctoral education. In initial academic positions, established nurse researchers may also have been influenced by the organizational skills of those colleagues they described as socializing them to the expectations for scholarly productivity.

Evidence of organizational skills possessed by the established nurse researchers was provided through their descriptions of research habits. These research habits contained the theme of concentration and devotion to the research project(s). The domains of research habits included the following: (1) creating an environment for research productivity, (2) time management, (3) the ongoing nature of the work, (4) being methodical, (5) being involved in multiple projects, and (6) being involved in collaborative work.

Organizational skills were apparent in the strategies used by established nurse researchers in creating an environment for productivity, in time management, and in being methodical and involved in multiple projects. Recognition and use of environments most suitable to individual research styles whether at home, in libraries, or other campus offices were described by the respondents. Concentration was needed to focus energy and mental abilities on the research during either the developmental or writing stages of the project. A sense of organization was provided through this control over the environment with the elimination of distractions, having preferred equipment, supplies and data available, and devotion of blocks of time to the activity. Creating time for research by adding to existing schedules, placing limits on selected professional activities, setting and respecting research priorities, and using time efficiently all reflected the organizational skills of the established nurse researchers. The most evident organizational skills in their research habits were described by the respondents related to the need

for being methodical, organized, and careful researchers, especially in the developmental and planning stages of the research projects.

Involvement in the multiple projects preferred by established nurse researchers also requires organizational skills for attention to several projects in various stages of the research process.

Articulation skills were characteristic of the established nurse researchers as demonstrated through their productivity in publications and paper presentations. Early publications provided one example of the antecedent skill. The mean number of early publications for the group was 6.50 with a median of 3.00. Ninety-five percent of respondents perceived that early experience in publishing work had a positive influence on the researcher in the areas of practice, "building on a theme," and "establishing credibility" in the discipline. The issue of practice concerned the development of articulation skills. Respondents' perceptions of the importance of practice was demonstrated in their mentorship activities where they provided opportunities for young scholars to present collaborative work or be involved in publishing, whether the papers had been developed to meet course requirements or developed following collaborative research projects. The antecedent seems to have been the opportunity for practice in this area rather than fully developed articulation skills. Another area where young scholars were described as assisted in the development of articulation skills was through the direction provided by the established nurse researcher respondents during the students' work on theses and dissertations.

Further evidence of the skills domain was provided by established nurse researchers through current rank and tenure status and demonstration of productivity in programs of research. Eighty percent of the respondents were at the rank of associate professor or professor with 75 percent tenured at their respective institutions. This provided evidence of earlier productivity of the respondents to meet the criteria for rank and tenure. An ongoing commitment to dissemination of research results was apparent in the weighted measures of productivity. The group of established nurse researchers demonstrated articulation skills through publications, presentation of papers, and receipt of grants for their research projects. The mean weighted total productivity score for the group was 44.675 for the past three years and 94.6429 for total careers, demonstrating continued productivity and use of articulation skills in publications, presentations, and grant proposals. Writing skills through publications were significantly correlated with articulation skills used with paper presentations and grant proposals for both the past three years and total careers. In addition, 81.21 percent of the respondent have done off-site consultation with a mean of 3.76 consultations during the past three years and 9.13 in total careers. Established nurse researchers were also appointed to editorial boards to assess the articulation skills of others. The mean numbers of editorial boards the respondents served on were 2.05 for the past three years and 2.00 for total careers.

Research Question Two

Environmental characteristics of and influences on the established nurse researchers was the focus of the second research question which was stated as follows:

What environmental variables do established nurse researchers identify as being essential to the support and success of their research and the research process?

Respondents discussed environmental characteristics supportive of research within a general theme of environmental facilitation. Four domains were present in this theme as essential to the support and success of research endeavors, expectations, administrative support, tangible resources, and collegial support.

Expectations in the environment

The first domain of environment facilitation concerned the presence of expectations. These expectations were supportive of the goals and values for the research. Shared values were present among researchers and work environments through institutional missions, requirements (expectations) for scholarly productivity, the operation of reward systems, and the value for research perceived in the profession.

Institutional missions. Research was a value at the institutional level and communicated to schools and faculty in the system. Five of the institutions visited were classified (Carnegie, 1976) as research institutions (71.43%) and two as specialized health center units (28.57%). Of the three missions of teaching, research and service, research had a primary focus as perceived by both established

nurse researcher respondents (90%) and representatives from the administrative staff of the respective schools of nursing (83.34%). This value for research was further supported by established nurse researcher respondents who ranked research first for both perceived institutional preference (85.71%) and personal preference (90.48%). This common perception of research as a thrust at the university level was supportive of the goals and values for research. In addition, congruence for the value of research was apparent at both the environmental and individual levels.

Expectations for scholarly productivity. The shared value for research was present in the environments of school, university, and discipline through actual expectations for demonstration of scholarly productivity. At the school level, requirements for research were present through the managerial subsystem. Representatives from school administration reported that research was required for appointment (83.33%), promotion and tenure (100%), and retention (66.66%).

Established nurse researchers described expectations of their colleagues similar to those communicated at the institutional level for promotion and tenure with the additional collegial expectations for collaboration and consultation. In general, the university expected research and the pursuit of knowledge followed by dissemination through teaching and publication and, ideally, supported through extramural funding. These expectations at the university level were similar to the personal expectations of the established nurse researchers with some researchers expecting inclusion of further activities beyond those

of the university. Established nurse researchers reported that scholarly subgroups in the discipline had shared values for research and scholarly productivity, but this could not be generalized to all members of the profession. Researchers are socialized to these expectations for productivity in the environments through doctoral education, mentoring relationships, and early academic positions held. Communication of the shared values occurs through perceived and stated expectations for research and scholarly productivity.

Reward systems. Expectations are further supported through the reward systems in place in the environments. Intrinsic and extrinsic reinforcement for successful research occurs in the environments of school, university, discipline, and society related to career development and/or actual awards. Intrinsic rewards accrue through personal feelings of accomplishment based on reinforcement in the environments, whether psychosocial or through seeing positive outcomes following utilization of the research. Extrinsic rewards are provided through promotion, tenure and retention in the system, merit pay increases, awards of funds for research or travel, or resources provided specific to the researcher's individual needs. These environmental rewards support expected involvement in scholarly endeavors and promote continuation of values of the system.

Valuing of research in the profession. As stated, shared values for research, although not generally prevalent throughout the profession, were present and congruent in the discipline's scholarly subgroups. In the profession, there were two domains supportive of

research: (1) opportunities through professional organizations and (2) validation of efforts. Professional societies and organizations provided opportunities for both psychosocial and substantive support in the activities of intellectual stimulation, sharing, and critique of work. Validation of efforts was a type of reward for the merit of the scholar's work. This validation was provided through peer review, funding and provision of resources, extension of the work, and increased opportunities for dissemination.

Administrative support for research

One impetus for research was provided through administrative support promoting research as integral to the academician's position. Lack of support limited, rather than inhibited, involvement in scholarly endeavors. In several established nurse researchers' descriptions of prior situations where administrative support was limited, research was still done. It may be noted that either the researchers were no longer in those prior, non-supportive positions or the environment was described as currently more facilitative. Currently, administrative support was present in the environments through general characteristics, workload allocations, and psychosocial support.

General characteristics of immediate environments. Most established nurse researchers were involved in graduate education in environments which supported large, established graduate nursing programs. The mean number of faculty in the environments was 107.83 (n=6 schools) with a mean full time equivalent total student enrollment

of 561.40 (n=5 schools) and total graduate student enrollment of 260.80 (n=5). For the seven schools with master's programs the mean age was 36.57 years. The mean age of the doctoral programs was 12.50 years when the six operational doctoral programs were considered but, if all seven schools are considered, the mean age would be 10.33 years. Established nurse researchers' reports of student faculty ratios yielded a mean of 9.29 students. Respondents from school administration reported ratios with variable bases of comparison but generally supported the reports of the established nurse researchers with no ratios greater than 1:10 or smaller than 1:4 faculty to students.

Workload allocations. Administrative support through time for research activities was a resource needed for successful research outcomes. Release time for research activities was not present in the environments. Rather, established nurse researchers reported that research was supported through workload allocations using some combination of the following strategies: (1) consideration of a match between teaching and research content areas, (2) stable teaching assignments, (3) freedom to work on scholarly endeavors off-site since ultimate productivity was the issue rather than office time, (4) relief from some committee tasks or committee attendance during peak periods in the research process, and (5) limitations on the number of administrative committee meetings. Workload allocations were apparent in official job contract percentages for teaching, research and service functions with means of 26.33 percent for research and 46.25 percent

for teaching functions for the group. Hindrances were described by respondents when competing role responsibilities were present. Generally through the administrative support in the environments, research was valued and supported with consistent and desired teaching assignments and encouragement of autonomy in research activities.

Psychosocial support. Administrators provided psychosocial encouragement and support as well as the more tangible support in the reward systems in the institution. Interpersonal contacts and special congratulatory efforts were reported by established nurse researchers for their accomplishments. Respondents described specific efforts made by their deans or immediate superiors which were encouraging to them in continuation of their programs of research or gratifying following specific scholarly accomplishments.

Tangible resources in the environment

Tangible resources included those services or resources in the environments other than psychosocial forms of support. The organizations supported research through the provision of services and resources. In their descriptions of essential resources, respondents listed the following ones as necessary for their research: secretarial services, computer services, access to subjects, financial support, libraries, assistance with data collection, physical space for work and storage of data, and illustrative/media services. All schools provided the following resources for faculty research activities: computer services, consultation on design and analysis, financial support, library services, physical office space, and secretarial services.

Sabbatical leaves for faculty use in research activities were also supported by these environments. In addition, the majority of schools also supported faculty research activities through the provision of research assistants (83.22%), continuing education programs or workshops (66.67%), and miscellaneous supplies for research (66.67%). Access to these resources was variable in the environments and much depended upon the researchers' motivation to seek the needed services or support. For example, for the committed researcher with a research idea in mind, applications for financial support or research assistants usually provided the requisite resources, yet some environments required research proposals, others one or two-page requests, and others personal contacts with the dean or the administrative representative for research activities. The main need for the researcher was knowledge of the system to gain access to resources in an efficient manner.

Research support units. Another resource for nursing research at six of the schools (85.71%) was the availability of research support units. These support units have faculty and staff to assist in the development and follow-through on research projects. These units were described as especially supportive to the novice researcher in the development of a research idea. Tangible resources, especially consultation services, provision of research assistants, and secretarial services were provided through these specialized units. These units were especially supportive for the project which had not yet received funding or in the preparation of materials for a grant application.

Sponsored research. Funding for research was a resource needed in accordance with the depth and scope of the project. Monetary support for the research varied. Small projects could be managed through school support services for postage, secretarial services, and microcomputers for data analysis. Intramural grants as "seed money" were available for pilot studies or studies on a small to moderate scale with additional computer and secretarial services, research assistants or equipment for data collection, and library support accessible in the school and university environments. Projects with complex methodologies, equipment requirements, and sampling frames required larger amounts of support, preferably through extramural funding, to provide for staff salaries and purchase of additional equipment and services.

School administrative representatives reported on the amount of sponsored research obtained by the nursing faculty as a whole for fiscal year 1985-1986. Broad ranges were apparent in the reports. Intramural grants at the school or university level yielded a median amount of \$43,053.00 for the year with a range from \$10,575 to \$1.5 million. Biomedical Research Support Grants in the environment were similarly variable with a median of \$3,866.20 for one year and a range from no funding received to \$40,000.00. Extramural funding received in that same year by the faculty as a whole yielded a median amount of \$269,658.00 with a range from \$218,583.00 to \$1.2 million.

Established nurse researchers were productive in their acquisition of intramural and extramural funding for research projects. To demonstrate minimal productivity of the group, 100 percent had been

awarded at least one federal grant and 80 percent at least one intramural grant for their research projects. The mean numbers of extramural grants for the group was 2.05 and 3.82 for the past 3 years and total career respectively. Similarly, the mean numbers of intramural grants was 2.55 and 3.29 for the past 3 year and total career respectively. These numbers of grants demonstrate the availability of funds in the environments of the respondents, both extramurally (discipline and society) and intramurally (school and university) and support the respondents' reports of financial support in their respective environments.

Collegial support for research

Psychosocial and substantive support from colleagues intramurally and/or extramurally was perceived as a facilitator of successful research outcomes. Respondents described this collegial support in cases where colleagues were interested and open to substantive sharing and collaboration. Highly competitive researchers in the environment were described as one inhibitor to successful research. This hindrance of competition was described related to psychosocial interactions and substantive sharing among researchers, not competition within the individual to achieve a higher level of performance nor in competition for securing grant monies. The shared values for research and use of intramural and extramural collaboration and consultation opportunities for substantive and psychosocial support were evident in this domain of collegial support.

Research Question Three

The third question addressed in this research related to disciplinary and environmental influences through network activities utilized by established nurse researchers. The question was stated as follows:

How do established nurse researchers engage in linkage or network activities (intramurally and extramurally) to influence the dissemination and utilization of research findings?

Collegial influences were an important environmental influence reported by the established nurse researcher respondents for the generation, dissemination, and utilization of research. Collegial network and linkage activities occurred between established nurse researchers and colleagues at the school, university, and disciplinary levels.

Collegial linkages with the generation of research

Linkages with colleagues must first be considered with the generation of research as the basis for dissemination and utilization of the findings. Since established nurse researchers were involved in programs of research, generation and extension of ideas and findings in their area of interest was a continuous, ongoing process. Extramural and intramural linkages with colleagues for generation of research occurred mainly through subscriptions to professional journals, membership in professional societies and organizations, mentorship, and utilization of communication and specific contacts.

Extramural linkages. Professional journals provided a link with the discipline and the body of knowledge currently in print as communicated by colleagues. Established nurse researchers used journal

subscriptions as a means of remaining "current" in their substantive area and for idea generation and development. The mean number of journals subscribed to by the group was 5.84. Reading was a method of continued development for keeping up with the substantive area and for the development of ideas. In addition, research-based refereed journals were the publication vehicle preferred by established nurse researchers for the communication of their own research findings.

Membership in professional societies provided a link to scholars and colleagues in the discipline. All respondents were members of Sigma Theta Tau, the International Honor Society of Nursing. Eighty percent of respondents were members of the American Nurses' Association Council of Nurse Researchers which provided a link with other researchers in the discipline and demonstrated a preference for a peer group focused on research. The scholarly contributions of the respondents provided a basis for the fact that 55 percent were Fellows of the American Academy of Nursing. Respondents described shared expectations and evident preferences for research with these scholarly subgroups in the discipline. Along with these three scholarly subgroups, respondents used membership in other professional organizations and specialty groups for intellectual stimulation, discussion, and substantive sharing. In their descriptions of valuable network activities for the nurse researcher, organizations in the discipline were frequently used for initial contacts to expand and maintain a network of peers.

Most respondents described past experiences when they had been mentored (mean = 3.30), often during educational programs. Most of

these relationships had dissolved or changed to a collegial relationship. For those respondents who reported the change to a collegial relationship, the linkage was used as a form of communication with a respected colleague for idea validation and/or development and for consultation in the area.

Contact with off-campus colleagues was maintained and frequent for established nurse researchers. Respondents reported communication with off-campus colleagues on a monthly (90.48%) or weekly (61.91%) basis, usually by telephone (85.71%) or through written communication (42.86%). The bulk of this communication focused on research interests or activities (71.19%). This communication provided a linkage for direct contacts specific to research for substantive sharing and psychosocial support for both the generation and dissemination of research.

Intramural linkages. Communication with intramural colleagues focused on dialog and research activities for the generation of ideas and collaboration on projects. Dialog with campus-based colleagues provided validation of ideas, intellectual stimulation, and consultation for further development of the research project. This opportunity for discussion with colleagues and the psychosocial support from peers assisted with the generation or further extension of the research. Use of intramural links for substantive sharing was dependent on whether the environment supported colleagues in the same or related area of research interest. For established nurse researchers with programs of research substantially different from those of their intramural colleagues, extramural contacts were

preferred to focus on the substantive area. When campus-based colleagues with similar research interests were available, a combination of intramural and extramural linkages were utilized for consultation and collaboration.

Serving as a mentor to others was generally an intramural linkage which could lead to extramural linkages as either a mentor or colleague. Established nurse researchers reported a mean of 17.26 individuals (median = 8.00) they had mentored or were currently mentoring. The value of the experience to the mentor fell into three themes, gratification, learning, and generativity. The learning theme provided opportunities for intellectual stimulation, interaction, and reflection which assisted in the generation of research.

Collegial linkages with dissemination of research findings

Linkages for dissemination of research were a further extension of those used for generation. Networking activities for substantive sharing and discussion of scholarly work were utilized by established nurse researchers. Respondents reported that the most important activities for dissemination of the research was getting the results to colleagues and seeking out opportunities for dialog. Presentation of papers and publication of findings were the major vehicles used for dissemination of scholarly work. In addition, presentation of papers was described as an antecedent step to publication so that feedback obtained following discussion with knowledgeable and interested colleagues could be considered in further dissemination efforts.

The commitment for dissemination of research findings was an evident value expressed by established nurse researchers. Discussion

occurred through informal discussion or research presentations in the researcher's immediate school or university environments. In addition, intramural colleagues were frequently consulted for initial critique on papers and manuscripts. Extramural dissemination to colleagues and clinicians focused on the more formalized presentations, publications, or specific contacts with colleagues to discuss research. Further opportunities for dissemination through invited presentations, seminars, or consultations were seen with successful research following initial dissemination where positive feedback was received from colleagues or reviewers. "Name reception" was described related to dissemination as the researcher became known in the field. This extramural recognition of research accomplishments resulted in further dissemination opportunities or work on related efforts in organizations, for consultations, or in peer review for publications or funding. When applicable, dissemination was directed to health care consumers in society through television or radio media or in personal or group discussions.

Utilization

As described by Fawcett (1984), there are two dimensions of research utilization. First, implementation of the findings in practice. This was a goal for the research as expressed by established nurse researchers. Secondly, utilization of research occurs with further research through replications and extensions of the work. Extension of the work was the basis for programs of research especially in the direction of clinically-relevant research and/or research providing further specificity to the knowledge base for practice and

nursing interventions. Eighty percent of the examples of successful research described had been utilized by the respondents or other researchers in replication or spinoff studies, with a potential for this percentage to increase in the future.

Vehicles to promote utilization of research findings were reported through presentations, publications, and consultations. Presentation of papers focused on being available to the applicable user groups, whether practitioners, clinicians, other researchers, patients and families, or the public in general. The goal for utilization was also apparent with publication preferences of established nurse researchers. In selecting a source for publication dissemination, respondents focused on readership or the intended audience. A wide distribution was valued for dissemination to those who would be most interested in the data and be able to utilize the results. One respondent who described her program of research as "highly pragmatic", further reported her efforts to warn clinicians to be cautious in implementation in practice settings if the results of the research were initial findings where alternate explanations had not yet been ruled out.

Along with dissemination, utilization was an evident value of established nurse researchers. Nursing research was intended to have some measure of application for the discipline, as a contribution to the knowledge base and to assist in improvement of health care needs of consumers. Real world implications was a theme of successful research with respondents describing the contribution of the example of successful research in the domains of pragmatics, discovery, or theory. Pragmatics focused on nursing interventions, improvements in care, and

relevance to practice. Discovery concerned the extension of knowledge where prior data were unavailable in the knowledge base. Major contributions in the domain of theory focused on theory testing and development and contributing this to the knowledge base. This value for utilization was also apparent in the discussions of mentorship and the sense of generativity inherent in the mentor role.

Summary

A discussion of-findings for the research problem on those individual and environmental characteristics of established nurse researchers for the generation, dissemination, and utilization of successful research was presented in this chapter. First, a theoretical model for scholarly productivity of established nurse researchers was presented and related to the study findings. Following the discussion of the model, each of the three research questions was addressed. Individual characteristics of established nurse researchers in question one were applicable to the psychosocial and technical subsystems of the model while environmental characteristics described with question two were applicable to the managerial and structural subsystems of the model. Goals and values were transmitted from the environments to all subsystems and, therefore, applicable to both individual and environmental characteristics. Environments provided inputs of expectations, resources, and colleagues. The overall output of the model is successful research outcomes through the generation, dissemination, and utilization of nursing research. Use of collegial linkages was addressed in question number three. In the following chapter, conclusions and recommendations for further study are presented.

CHAPTER VI CONCLUSIONS AND RECOMMENDATIONS

The purpose of this exploratory study has been to determine individual and environmental characteristics of established nurse researchers that are related to the generation, dissemination, and utilization of successful research. A naturalistic inquiry paradigm and an organizational systems substantive paradigm were used to guide this research for individual and contextual factors associated with scholarly productivity of these leading nurse researchers. Multiple methods of data collection were utilized with a sample of 21 established nurse researchers from seven leading academic institutions with graduate nursing programs to determine variables related to scholarly productivity. The research has extended the work of Batey (1978) and Franulis (1984). In this chapter, conclusions and recommendations from the study are presented.

Conclusions

A Model for Nurse Faculty Research Productivity

An organizational systems model was used to illustrate the interrelationship of individual and environmental characteristics of the established nurse researchers. Main inputs into the model were expectations, resources, and colleagues through the four environments of society, discipline, university, and school of nursing. The subsystems provided the immediate influences on the researchers with

individual characteristics associated with the psychosocial and technical subsystems and environmental characteristics associated with the structural and managerial subsystems. The goals and values subsystem was concerned with both individual and environmental characteristics in the transmission of values from the environments to the subsystems. Outputs from the system were successful research outcomes through generation, dissemination, and utilization of research in the environments.

Characteristics of established nurse researchers

Individual characteristics of established nurse researchers included individual attributes which operate through the psychosocial and technical subsystems of the model as correlates of successful research outcomes in nursing. Antecedents and essential characteristics for successful research described by established nurse researchers involved individual character traits, knowledge, and skills. Character traits included interest, commitment and motivation, perseverance, creativity, independence, and an ethical sense for the maintenance of scientific integrity. Knowledge needed by nurse researchers included the knowledge base and opportunities for continued learning along with the humility to know when seeking help or consultation was appropriate. Skills for successful researchers included intellectual stamina and curiosity, collegiality (interpersonal skills), and organizational and articulation skills.

Socialization of successful researchers

Socialization into the role of a nurse researcher has been one area identified for further investigation of scholarly outcomes in

nursing (Ostmoe, 1984, 1986; Pranulis, 1984; Lia-Hoagberg, 1985). Pranulis (1984) reported that the development of a nurse researcher identity was the one significant characteristic associated with research productivity but that further study was needed to identify influences on this identity (p.212). Lia-Hoagberg (1985) stressed the importance of further investigation on professional socialization and the effects of institutional, departmental, personal preferences, and support systems for research productivity (p. 159). This need for socialization into the role of researcher and scholar was apparent in the findings from the present research. Established nurse researchers' preferences for research were illustrated through the goals and values subsystem and influenced the four other subsystems in the model.

Socialization was a major influence on the career development of established nurse researchers. Respondents illustrated the occurrence of professional socialization in their early experiences in academic settings with colleagues and mentors where expectations for scholarly productivity were transmitted. Established nurse researchers, who were actively involved in the development of knowledge, viewed this as a responsibility especially through dissemination of research findings, and demonstrated a commitment to extension of knowledge through their research programs. These values were transmitted by the established nurse researchers in their environments. In addition, established nurse researchers reported how they socialize young scholars through their teaching functions and within the generativity theme of the mentor role. Expectations in the environment foster this socialization process. Graduate students reportedly sought learning and research

experiences with faculty with demonstrated credibility in research activities. Through mentoring or working with these established nurse researchers, socialization experiences occur for the further development of research scholars. This was apparent in the respondents' perceptions of "gratification" on the accomplishments achieved by their present or former mentees.

Environments of established nurse researchers

Socialization of research scholars alone is not sufficient to yield the successful research exemplified by established nurse researchers. Established nurse researchers described their environments as facilitatory to research. Environmental facilitation was characterized through environmental expectations, administrative support, tangible resources, and collegial support.

Expectations in the environments of these researchers were supportive for research with shared values provided through institutional missions, requirements for scholarly productivity, reward systems, and the value of research in the discipline transmitted by scholarly subgroups. Expectations were further promoted through administrative support and provision of tangible resources. Administrative support was demonstrated in workload allocations and provision of psychosocial encouragement and rewards. School and university environments offered access to tangible resources and services perceived as essential for research and for obtaining further extramural funds for research. The discipline provided support for research through its scholarly subgroups and funding organizations. Collegial influences included intramural and extramural linkages in the

environments through network activities for generation, dissemination, and utilization of successful research outcomes. Useful linkages for the researcher included use of professional subscriptions, societies and organizations, mentorship, and purposeful direct contacts with colleagues.

Hallmarks of Successful Research Outcomes

Findings from this research have revealed that established nurse researchers are involved in research activities that address the future hallmarks of success in nursing research identified by Fawcett (1984): (1) elimination of obstacles to nursing research, (2) acceptance of multiple modes of inquiry, and (3) utilization of nursing research findings in clinical practice (pp. 6-9). These hallmarks represent disciplinary values and were exemplified by the established nurse researchers.

Obstacles to nursing research are minimal in the case of established nurse researchers in the leading academic environments studied. Socialization for research activities occurred early in the careers of established nurse researchers who indicated that they currently influence mentees, colleagues, and the discipline of nursing by their example and through their successful research outcomes. Established nurse researchers clearly addressed the advanced academic preparation essential for nursing research and demonstrated how they have furthered their own development of expertise through self-selected study strategies. Established nurse researchers were engaged in a variety of research activities, with many involved in multiple projects. In their recommendations for further development by

colleagues and students, they illustrated that nurses should be involved in all forms of research activities, with all research activities viewed as valuable. Collaborative research ventures with more established researchers were recommended to complement knowledge bases. Environmental facilitation for research was apparent in the environments of the established nurse researchers, especially through administrative support in workload allocation for the commitment of time within their faculty roles for research. This awareness of the need for time to conduct research within the academic position was apparent but it should also be noted that established nurse researchers reported that they work approximately 60 hours per week.

Established nurse researchers exemplified use of multiple modes of inquiry in that several were involved in both predominantly quantitative and qualitative methods. In addition, several researchers described plans for further study and development in a new area of design or analysis. Established nurse researchers were knowledgeable in the variety of modes of inquiry available to the researcher and identified colleagues who were skilled in these areas and available for consultation, often in their own environments.

Utilization of research findings was demonstrated in that 80 percent of the studies identified by the established nurse researchers as examples of successful research had already been used in either practice or further research through replications and spinoff studies. In addition, respondents described research preferences for practice-relevant research, especially as programs of research evolved. Methods described to promote utilization of successful research studies

were reported primarily through dissemination of findings in publications, paper presentations, dialog with colleagues and practitioners, and research consultation and collaboration.

Established nurse researchers exemplified these hallmarks for success in research and communicated these values to others. Their influence on other nurses will continue to provide further extension of these hallmarks through the transmission of goals and values for research and the socialization of research scholars.

Recommendations and Implications

Recommendations for enhancing future successful research outcomes in nursing are presented in these areas: administrative roles, facilitatory environments, funding priorities, education, and further research. These recommendations are similar to those proposed by others in the discipline (American Nurses' Association Cabinet on Nursing Research, 1985; Batey, 1978; Brimmer et al., 1983; Lia-Hoagberg, 1985; National Center For Nursing Research, 1986; Pranulis & Gortner, 1985; Stevenson & Woods, 1986).

Recommendation One: Administrative roles

Academic deans and other administrators facilitate faculty members' development of and involvement in programs of research through workload allocations, provision of resources targeted for research, and support for continued development.

Administrative roles must be directed at the support of research and scholarly productivity through general managerial characteristics, workload allocations, and support for successful research outcomes.

Administrators can promote the development of research scholars and provide resources directed at the accomplishment of research projects. Individuals can be recruited and appointed to positions based on their possession of antecedent attributes of the research scholar and/or evidence of scholarly productivity to utilize effectively resources in the environment. Administrators can then direct the use of services and resources to promote development of the essential characteristics of character traits, knowledge, and skills of the research scholar and encourage the accomplishment of successful research outcomes.

Leading academic environments have become more facilitative for research since Batey's (1978) investigation and recommendation concerning the elimination of the term "release time" for research. Workload allocations should be implemented over the more transient concept of release time to make research integral to the role of the nurse as a research scholar. Employment contracts and job descriptions should include reference to expected productivity outside of teaching, administrative, or service functions, with these expectations clearly communicated and reinforced by administrators.

Administrative facilitation for research should be directed at providing both psychosocial and substantive support. Psychosocial support should include encouragement and recognition of scholarly productivity. Travel money and resources for research can be used as tangible reinforcement for scholarly productivity. Substantive support should be provided through workload allocations considering preferences and stability in teaching assignments and flexibility in research activities. Administrative, school, and research team meetings should

be conducted efficiently with reasonable committee responsibilities. When possible, structural controls which hinder research activities should be limited. For example, provision of resources like secretarial services, research assistants, and intramural funds can be facilitated with direct and limited application or proposal processes. Research support units can be used to focus on the provision of these resources and services within the immediate environments of research scholars. Overall, the expectations are transmitted, successful research outcomes encouraged and reinforced, and continuing knowledge generation, dissemination and utilization stressed.

Recommendation Two: Facilitatory Environments

Practice, educational, and disciplinary environments must be developed for facilitation of research scholars in nursing. Environmental facilitation should be directed to expectations in the environment, administrative support, tangible resources, and collegial support.

Expectations for research and scholarly productivity in the environment provide shared values to researchers. These shared values must be demonstrated through missions, performance requirements, reward systems, and the overall valuing of research in the profession. Congruent perceptions on the importance of research and scholarship and expectations for performance should be apparent for individual research scholars and their respective institutions. Administrative support, tangible resources, and colleagues in the environment provide visible evidence of the importance for research and scholarship.

Scholarly subgroups and funding organizations support the research scholar through validation of efforts and provision of psychosocial and tangible support. Support must be further extended into the profession as a whole. This extension has begun with the evolving role for the research scholar in practice settings. Additional academic and practice settings should become facilitative to the researcher for the generation, dissemination, and utilization of successful research outcomes.

Tangible resources include those monetary and non-monetary resources and services available in the environment for use in research activities. Established nurse researchers are employed in environments which provide essential services and resources or opportunities for access to these tangible resources. Environments facilitate access to these basic resources, including secretarial services, computer resources, access to subjects, financial support for small projects, libraries, assistance with data collection, physical space, and media services.

Research Support Units can be used to coordinate availability of services and facilitate access to resources. These specialized units are also valuable in that the focus is on scholarly productivity with the researcher taking an active role in seeking needed resources particular to the research project. This facilitation can save the researcher time in discovering availability of resources and in seeking the requisite services. The units can also provide an equal access to all researchers, based on the merits of individual proposals or projects. Established nurse researchers described Research Support

Units as particularly valuable for the novice researcher through consultation services and available learning opportunities.

Funding has been described as a major facilitator for research activities, especially when the scope and complexity of the project increases. Intramural funding was available in some amount in all institutions studied. Budgetary allowances for such monetary resources are in place in organizational environments, for example, at the school and/or university level(s).

Network opportunities were utilized by established nurse researchers for intellectual stimulation, discussion, and substantive sharing. The value of network activities related to (1) initial contacts to expand the network, (2) non-specific contacts at meetings to maintain the network, and (3) direct goal-oriented contacts to focus on the generation, dissemination, and utilization of research. The profession must continue to communicate the value of research to the discipline and provide opportunities focused on research and specific audiences for effective dissemination and utilization of the present and evolving body of nursing knowledge. Individual researchers must then utilize these opportunities to focus on research and expanding their own network in the area of research preference.

Recommendation Three: Funding Priorities for Nursing Research

Allocate funded support research in two important areas:

(1) for clinically relevant studies which contribute to the advancement of nursing science and (2) for development of expertise in research through adequately supported postdoctoral fellowships in nursing.

The priority for clinically relevant research is currently being supported by the National Center for Nursing Research at the National Institutes of Health (1986) and the scholarly subgroups of nursing, such as the American Nurses' Association Cabinet on Nursing Research. Postdoctoral fellowships have currently been identified by the National Center for Nursing Research at the National Institutes of Health (1986) as an area of funding priority. Established nurse researchers, as leaders in the discipline, further identified the need for clinically relevant research and realistic postdoctoral fellowship opportunities. Priorities in these areas will further develop the body of knowledge and provide a critical mass of established researchers for the discipline.

Recommendation Four: Education and Development of Research Scholars

Focus educational preparation of nurses on facilitating the development of antecedents and essential characteristics needed by the research scholar for successful research outcomes.

The development of research scholars is a major function of institutions providing advanced academic preparation for nurses. Based on the experiences of established nurse researchers, development of individual research scholars should be promoted with students, neophyte researchers, and research colleagues.

Students. In the case of students, socialization on the status and value of research should be initiated in their basic academic education. Beginning practitioners should become knowledgeable consumers of research literature for potential utilization of findings

of successful research. This would increase scholarly expectations and the status given to research in the profession in general, thus extending beyond the current focus in academic and scholarly subgroups identified by established nurse researchers. Graduate education should be stressed and allow for opportunities for active participation in the research process. Opportunities for involvement in research activities should be designed to stimulate the development of antecedent character traits, knowledge, and skills of the nurse researcher.

Faculty with programs of research can promote the development of the antecedent character traits of interest, commitment and motivation, perseverance, creativity, independence, and ethics through role modeling and mentoring activities with students serving as research assistants. Active involvement of students in actual research activities appropriate to their program requirements and substantive areas can complement development of knowledge bases through enrollment in coursework. Acquisition of knowledge should be characterized as a building process for continued development of the knowledge base in both methodologic and substantive areas through directed, self-selected, and collaborative learning experiences. Through these same activities, students can be assisted in the development of the mental, interpersonal, organizational, and articulation skills for nursing research.

It is being recognized increasingly that a strong academic preparation for nursing practitioners is needed. Similarly, research scholars need a strong advanced academic preparation for successful research outcomes. This socialization process through a strong

academic background and association with established scholars is the basis for the development of the identity needed as a nurse researcher. As exemplified by established nurse researchers, this identity must be internalized as a career commitment and not restricted to functions within a 40-hour week.

Neophyte researchers. The period following completion of graduate programs is a critical period for communicating research expectations to the neophyte researcher and encouraging the development of the essential characteristics of the nurse scholar. Formal or informal postdoctoral studies and/or work with a mentor can greatly assist neophyte researchers during this critical period. Postdoctoral studies were described as providing the researcher with the opportunity to solidify research interests, gain experience, be relieved of workload responsibilities, broaden or practice skills, and work with a mentor. This opportunity allows for development of the essential characteristics by capitalizing on character traits, knowledge, and skills of the research scholar.

A goal of this period is the development of a viable program of research. Opportunities for mentorship should be available and utilized for implementation of the support and learning themes described by established nurse researchers. Support through mentorship is provided through encouragement and guidance related to career development and the building of a program of research. Learning is enhanced through mentors who serve as role models, advisers, supporters, and facilitators. Character traits, knowledge, and skills are communicated in the values, standards, and activities needed for

generation, dissemination, and utilization of nursing research. This is a time of development of effective research habits focused on environments for optimum productivity, time management, ongoing research activity, and being methodical. Mentors can assist the neophyte researcher in establishing priorities for research and methods for time management. Involvement in collaborative projects can also assist in the development of knowledge and skills by the neophyte researcher and in the division of labor in research activities.

This critical period in the development of the research scholar is the time for establishing the program of research and obtaining the resources to support it, as with intramural and extramural funding and collegial networks. Support for projects is sought through new investigator grants and intramural grants. Acquisition of small research grants and work with mentors in the area will allow the neophyte researcher to develop the initial "track record" of the research scholar. Development of both intramural and extramural psychosocial and substantive linkages extend the supportive network of the research scholar for generation, dissemination, and utilization of nursing research. In the work environment, expectations for research accomplishments are demanded and, at the same time, facilitated through psychosocial encouragement and support, realistic workloads, and stable teaching assignments in the area of research preference.

Research scholars. The term "research scholar" is used here to connote the individual's ongoing activity in a program of research for the generation, dissemination, and utilization of research outcomes. Nurses with programs of research must also be encouraged in continued

development of the essential character traits, knowledge, and skills for research expertise and ongoing productivity. Collegiality with peers in academia and practice should be promoted, whether on collaborative research projects or in consultation with intramural and extramural colleagues. The research scholar's influence in the discipline should be expanding through broadening extramural linkages for dissemination and utilization of research outcomes. The four themes of successful research (personal interest and motivation, methodological rigor, importance to the discipline, and real world implications) should be apparent with their research programs and individual projects. This is a time of increased work in research leading to involvement in multiple projects and acquisition of intramural and extramural funding for these projects. These individuals should assume the responsibility for socializing students and neophyte researchers, particularly through collaborative and mentoring activities.

Recommendation Five: Future Research in the Area

Based on the findings in this study, several issues emerge which warrant further investigation. Replication of the study with nurse researchers in practice settings is recommended to further explore the individual and environmental characteristics which lead to successful research outcomes. Study of the practice environment will provide an opportunity to discover if the individual character traits, knowledge, and skills of researchers must continue to be present and what differences may occur or what environmental linkages and resources must be present to interact efficiently with the individual characteristics.

Examples of successful research studies cited by the established nurse researchers further supported the following four themes of successful research: personal interest and motivation, methodological rigor, importance to the discipline, and real world implications. A second area for further investigation is the development of an instrument to assess the potential success of a research study based on these themes.

A third area for further research is development of an instrument to measure acquisition and levels of individual antecedent character traits, knowledge, and skills that are needed for successful research. These antecedent and essential characteristics were identified as necessary for the nurse scholar. Specification of learning strategies at undergraduate, graduate, and postgraduate levels to focus on acquisition and integration of the attributes of a research scholar would provide further data to evaluate how these individual characteristics can be developed effectively. The design of an optimum reward system for production of successful research outcomes would also be of interest to further stimulate development of the attributes of the research scholar.

Summary

In this study, the individual and environmental characteristics of established nurse researchers were investigated. Interactions between these individual and environmental characteristics were illustrated with an organizational systems model. Established nurse researchers identified and exemplified antecedent and essential individual characteristics for successful research outcomes. Environmental

facilitation for successful research outcomes was apparent in the academic and disciplinary environments described by the established nurse researchers. This chapter has included conclusions from the study and recommendations for administrative roles, facilitatory environments, funding priorities, education, and further research.

APPENDIXES

APPENDIX A
NOMINATION FORM FOR ESTABLISHED NURSE RESEARCHERS

INSTITUTION: _____

NURSE RESEARCHER: _____

ADDRESS: _____

TELEPHONE: (____) _____

CRITERIA DEMONSTRATED BY THE NOMINEE: (Please indicate all that apply)

Category A (Must meet all)

- ☐ Has an existing program of funded research.
- ☐ Has provided leadership to a research team.
- ☐ Has published research findings in the past four years in one or more of these journals:

- ☐ Nursing Research
- ☐ Research in Nursing & Health
- ☐ Journal of Advanced Nursing
- ☐ Advances in Nursing Science
- ☐ Western Journal of Nursing Research
- ☐ International Journal of Nursing Studies

- ☐ Findings from past research studies have:

- ☐ been utilized in nursing practice, academic, or administrative settings

or

- ☐ lead to external replications of the research methodology.

- ☐ Holds a doctoral degree.

- ☐ Is employed full-time at an academic institution with an advanced graduate nursing program.

Category B (Must meet 2 of 4)

- ☐ Has presented research findings at one or more national/international meetings.
- ☐ Has received one or more regional/national research awards: _____
- ☐ Holds current membership in the ANA Council of Nurse Researchers.
- ☐ Holds current membership in other professional research societies: _____

Dean (signature)

(date)

APPENDIX B
INFORMED CONSENT TO PARTICIPATE IN NURSING RESEARCH PROJECT:
INDIVIDUAL AND ENVIRONMENTAL CHARACTERISTICS OF
ESTABLISHED NURSE RESEARCHERS

Investigator: Rose T. Kearney
3614-B SW 29th Terrace
Gainesville, Florida 32608
Phone (904) 373-8966

You have been nominated to participate in a national research project. This consent form is designed to provide you with information about this nursing study and to answer any questions you may have.

The purpose of this research is to explore individual and environmental characteristics of established nurse researchers and to analyze the epistemic (knowledge-building) processes used in scholarly nursing endeavors. Specific aims of the study are:

1. What precursors (antecedents) and personal characteristics do established nurse researchers identify as contributing to and influencing successful research outcomes and other scholarly endeavors?
2. What environmental variables do established nurse researchers identify as being essential to the support and success of their research and the research process?
3. How do established nurse researchers engage in linkage/network activities (intramurally and extramurally) to influence dissemination, diffusion, and utilization of research findings?

The research methods will be qualitative and quantitative. Data collection methods will include on-site interviews with the study participants and possibly additional interviews by telephone or mail if the need arises. The researcher will use semi-structured interviews and other instruments to collect data that will address the aims of the study.

Only aggregate information will be released when research findings are disseminated. Study participants will be given the opportunity to be involved in the review of the research findings prior to publication and dissemination of the results. No actual risks have been identified or are anticipated.

Potential benefits of the study are numerous. The study should result in benefits for the study participants, the nursing profession, and ultimately, health care consumers by improving our understanding of the characteristics of established nurse researchers and their environments which result in further development of the body of nursing knowledge through scholarly productivity.

Informed Consent Form -- page 2

Analysis of structure and process used by established nurse researchers and the nature of their organizational environments that nurture nursing scholarship will increase the quality and quantity of nursing research.

You have been nominated by your Dean because you meet the criteria for an "established nurse researcher," are well grounded in the research process, and have demonstrated commitment to advancing the discipline of nursing. If you are willing to participate in the study, please read the agreement, sign the consent form, and return page 2 in the addressed, stamped envelope by April 30, 1986.

CONSENT TO PARTICIPATE

I would like to participate in this project and agree to the researcher visiting my institution to conduct a personal interview (2 hours) with me. I understand that the interview will be audiotaped for the purpose of accurate data collection. The date and time for the interview will be arranged at my convenience. I also agree to provide additional information needed by telephone or by mail at no personal cost or at no cost to my institution. I also understand that I will not receive an honorarium for my participation in the study. I am free to withdraw from the study and discontinue participation in this research project at any time.

Signature: _____

Date: _____

I further extend my permission to the interviewer to audiotape at interview for the purpose of accurate data collection.

Signature: _____

Date: _____

(Please Sign and Return this Page)

APPENDIX C
RESEARCH INSTRUMENTS

CODE NUMBER _ _ _ _

PRE-INTERVIEW PROFILE

General Information: Based on your expertise as an established nurse researcher, you have been selected to participate in a national study to focus on how established nurse researchers formulate significant research questions and what characteristics they attribute to success in research activities. This profile has been designed as a preliminary step to individual and group interviews. The questionnaire has been designed to assist in addressing the following study aims:

*What precursors (antecedents) and personal characteristics do established nurse researchers identify as contributing to and influencing successful research outcomes and other scholarly endeavors?

*What environmental variables do established nurse researchers identify as being essential to the support and success of their research and the research process?

*How do established nurse researchers engage in linkage/network activities (intramurally and extramurally) to influence the dissemination, diffusion, and utilization of research findings?

Please complete Parts A through E as completely as possible. Section F is for additional comments for you to include any further information which you feel is pertinent.

A. PROFESSIONAL BACKGROUND INFORMATION

EDUCATIONAL PREPARATION

Baccalaureate

Major _____

Year Earned 19

Masters

Degree ☐ M.A. ☐ M.N. ☐ M.S. ☐ M.S.N. ☐ Other _____

Major _____

Year Earned 19

Doctorate

Degree ☐ D.N.S. ☐ Ed.D. ☐ Ph.D. ☐ Other _____

Major _____

Year Earned 19

Other

Area of Study _____

Degree _____

Year Earned 19

POST-DOCTORAL WORK: Please describe all formal post-doctoral work, including fellowships, formal coursework, etc. (Attach additional pages, if desired.)

	Date	Place	Description of Work
Fellowships/ Grants:	_____	_____	_____
Formal Coursework:	_____	_____	_____
	_____	_____	_____

CLINICAL SPECIALTY: Please select the one area which best reflects your area of clinical specialization.

- ☐ Adult Health
☐ Community / Family Health
☐ Child Health
☐ Gerontology / Aging
☐ Mental Health
☐ Parent-Child Health / Maternal-Infant
☐ Women's Health
☐ Other _____

JOURNAL SUBSCRIPTIONS: Please indicate the number of professional journals to which you currently subscribe.

_____ Journals

PROFESSIONAL SOCIETIES: Please indicate the professional societies in which you currently hold membership.

- [] American Academy of Nursing
[] ANA Council of Nurse Researchers
[] Sigma Theta Tau
[] Society for Research in Nursing Education
[] Others _____

B. POSITIONAL DATA

- RANK [] Assistant Professor
 [] Associate Professor
 [] Professor
 [] Other

POSITION/TITLE: Do you hold an additional titled position other than your indicated professorial rank?

- ```
[] No
[] Yes, identify:
```

YEARS AT CURRENT LOCATION: Please indicate the number of years of full-time service at your current place of employment.

\_\_\_\_ years

## TENURE STATUS

- ```
[ ] Tenured
[ ] Nontenured ---- Tenure tract position? [ ] Yes
                                                [ ] No
```

PROGRAM ASSIGNMENT: Please indicate your program assignment(s), by percentages.

- | | |
|---------|---------------|
| _____ % | Baccalaureate |
| _____ % | Masters |
| _____ % | Doctoral |
| _____ % | Other |

CAREER AGE: Please indicate the number of years of full-time academic appointments that you have held in a college or university setting.

years

PRIMARY RESPONSIBILITY: Please indicate your official contract responsibilities, by percentages.

☐ Teaching/Instruction: _____ Student/Faculty Ratio 1 :1
☐ Administration _____
☐ Research _____
☐ Practice _____
☐ Other _____

JOB-RELATED ACTIVITIES: Please indicate weekly averages, in hours.

_____ Teaching/instruction (in classroom)
 _____ Classroom preparation
 _____ Counseling/advising students
 _____ Clinical supervision
 _____ Clinical preparation
 _____ Grading papers
 _____ Membership on thesis committees
 _____ Chairing thesis committees
 _____ Membership on dissertation committees
 _____ Chairing dissertation committees
 _____ School, college, and campus meetings
 _____ Clinical practice
 _____ Research activities
 _____ Research consultation
 _____ Writing, including grants and publications
 _____ Community service
 _____ Other: _____

WORK HABITS

On the average, how many hours per week do you work (including work at home)?

_____ hours

On the average, what percentage of your working time is spent alone?

_____ percentage

C. INSTITUTIONAL DATA

PRIMARY INSTITUTIONAL MISSION: Please indicate what you perceive to be the primary institutional mission at your institution.

☐ Teaching/instruction
☐ Research
☐ Service
☐ Other _____

D. PERSONAL INFORMATION

AGE _____ years

SEX ☐ female ☐ male

RACE OR ETHNIC ORIGIN

- ☐ American Indian
☐ Asian or Pacific Islander
☐ Black
☐ Hispanic
☐ White
☐ Other _____

PLACE OF BIRTH _____

City

State/Province

Country

PARENTS --

FATHER: Please check one in each column which best describes your father's occupational and educational background.

Occupation

- ☐ Nurse
☐ Physician
☐ Other health professional
☐ Businessman
☐ Lawyer or engineer
☐ Member of the clergy
☐ Military officer
☐ Teacher or school administrator
☐ Other professional occupation
☐ Homemaker
☐ Worker, skilled
☐ Worker, semi-skilled
☐ Worker, unskilled

Highest Educational Level/Degree

- ☐ Grammar school or less
☐ Some high school
☐ High school diploma
☐ Vocational-technical training
☐ Some college
☐ Undergraduate degree
☐ Some graduate school
☐ Master's degree
☐ Master's degrees (more than 1)
☐ Doctoral degree (Ph.D., Ed.D., M.D., J.D., D.D.S., etc.)

MOTHER: Please check one in each column which best describes your mother's occupational and educational background.

Occupation

- ☐ Nurse
☐ Physician
☐ Other health professional
☐ Businesswoman
☐ Lawyer or engineer
☐ Member of the clergy
☐ Military officer
☐ Teacher or school administrator
☐ Other professional occupation
☐ Homemaker
☐ Worker, skilled
☐ Worker, semi-skilled
☐ Worker, unskilled

Highest Educational Level/Degree

- ☐ Grammar school or less
☐ Some high school
☐ High school diploma
☐ Vocational-technical training
☐ Some college
☐ Undergraduate degree
☐ Some graduate school
☐ Master's degree
☐ Master's degrees (more than 1)
☐ Doctoral degree (Ph.D., Ed.D., M.D., J.D., D.D.S., etc.)

SIBLINGS

Number of brothers _____

Number of sisters _____

Your ordinal position in family _____

MARITAL STATUS

- ☐ single
☐ married
☐ separated
☐ divorced
☐ widowed

NUMBER OF DEPENDENTS

- ☐ none
☐ 1
☐ 2
☐ 3
☐ 4
☐ more than 4

CAREER INFLUENCES

Who or what has been the greatest influence on your professional nursing career and why? (Please describe the relationship).

Who or what has had the greatest influence on your research success and why? (Please describe the relationship).

MOBILITY: Please indicate the number of major career moves from one institution to another during your professional career.

_____ Career moves

E. SCHOLARLY ACCOMPLISHMENTS: Please indicate a count for your scholarly accomplishments in the past 3 years and for your career to date.

	<u>1983-1986</u>	<u>Career Activities (total)</u>
Publications		
Books	_____	_____
Book chapters/monographs	_____	_____
Refereed journals	_____	_____
Non-refereed journals	_____	_____
Published book reviews	_____	_____
Other	_____	_____
	_____	_____
	_____	_____
Papers Presented at		
International meetings	_____	_____
National meetings	_____	_____
Regional meetings	_____	_____
Other	_____	_____

	<u>1983-1986</u>	<u>Career Activities (total)</u>
Research Projects & Grants		
Non-funded	_____	_____
Grants obtained		
DHHS Div. of Nursing	_____ PI _____ Co-PI	_____ PI _____ Co-PI
Other Federal sources	_____ PI _____ Co-PI	_____ PI _____ Co-PI
A.N.A.	_____ PI _____ Co-PI	_____ PI _____ Co-PI
A.N.F.	_____ PI _____ Co-PI	_____ PI _____ Co-PI
Sigma Theta Tau, Inc.	_____ PI _____ Co-PI	_____ PI _____ Co-PI
Other National sources	_____ PI _____ Co-PI	_____ PI _____ Co-PI
Sigma Theta Tau, local	_____ PI _____ Co-PI	_____ PI _____ Co-PI
University sponsored	_____ PI _____ Co-PI	_____ PI _____ Co-PI
College sponsored	_____ PI _____ Co-PI	_____ PI _____ Co-PI
Other: _____	_____ PI _____ Co-PI	_____ PI _____ Co-PI

Consultations (include all types of official,
off-site consultations)

Editorial Boards

Research Awards and Honors

(name) _____

(name) _____

(name) _____

(Attach additional pages or curriculum vitae, if desired.)

F. ADDITIONAL COMMENTS: Please include any additional comments you feel are pertinent.

Thank you for your cooperation. Please return the completed questionnaire in the stamped self-addressed envelope.

** Rose Kearney *** 3614-B SW 29th Terrace *** Gainesville, Florida 32608 **

CODE NUMBER _ _ _ _

PERCEPTIONS OF SUCCESSFUL RESEARCH *

General Information: Please think back over nursing research projects you have been involved in and identify one you would consider quite successful, that is, one that has made or will make a significant contribution to nursing. The notion of a successful research project includes all kinds of research (qualitative or quantitative). The research should have been completed, written and reported in the literature or at professional meetings. Please keep in mind the same successful research project in answering all questions.

The successful research would be one that received positive acceptance by reviewers and colleagues, perhaps been cited, generated positive feedback from readers, and recognized as making a major contribution to the field.

Procedure: Part I includes questions that are structured and semi-structured. Please complete these items and include brief reactions to concerning the successful research study you have selected. Questions included in Part II ask you to rate the research on a five-point scale.

PART I

A. BACKGROUND AND ORIGIN OF A SUCCESSFUL RESEARCH PROJECT

1. Please explain the purpose of the research.

2. How did the research originate?

Where did the idea come from?

How was the idea further developed?

How were research questions generated?

* Adapted by L. Moody, R. Kearney, and R. D'Amico from instruments developed by Campbell, Daft, and Hulin (1983), with permission.

3. What was there about the project that excited or attracted you at the time?

4. Was the research funded?

☐ No

☐ Yes Amount of funds: \$ _____

Source of funds: _____

What was your role? ☐ PI ☐ Co-PI
☐ Investigator/Research Team
☐ Other _____

5. Has the research been published?

☐ No

☐ Yes --- Publication Source ☐ Book or book chapter
☐ Monograph
☐ Refereed journal
☐ Non-refereed journal
☐ Other

6. What is the best single reference for your research in the literature?

7. Describe your perceptions of the research success in terms of:

(a) Acceptance and feedback from reviewers?

(b) General acceptance by the field?

(c) Reprint requests and citations?

8. Describe factors that facilitated the origination of the research, for example,
- (a) Roles?
 - (b) Organizational context or environment?
 - (c) Reward system?
 - (d) Other factors perceived as facilitators at the time?
9. Describe factors that hindered the origination of the research, for example,
- (a) Roles?
 - (b) Organizational context or environment?
 - (c) Reward system?
 - (d) Other factors perceived as hindrances at the time?
10. Consider efforts toward extending this research.
- Have you done any original replications? ☐ No
☐ Yes. How many? _____
- Have replications been done by others? ☐ No
☐ Yes. How many? _____
- Have you done any spinoffs from the original research?
☐ No
☐ Yes. How many different kinds? _____
Describe:

Are you aware of any spinoffs done by others?

☐ No

☐ Yes. How many? _____

Describe: _____

11. Describe your efforts toward disseminating the research.
12. Describe efforts toward utilizing the findings from the research.
13. Describe linkages/networks used to interest others in using or extending the research findings. (Organizations, contracts, agencies)
14. Describe methods of persuasion used to interest others in using or extending the research findings.
15. What do you see as the major contribution of the research project to nursing?

PART II

A. Motivation for the Research

The following is a series of questions to complete about your motivation for doing the research. Please respond on the basis of a five-point scale that represents the extent to which each statement applies to the project. A "0" indicates to no extent and a "4" indicates to a great extent. Mark "NA" for not applicable. Please keep in mind the same successful research project used in Part I.

TO WHAT EXTENT WOULD YOU SAY THAT THE PRIMARY REASON FOR YOUR RESEARCH . . .	Rating Scale					Great Extent
	No Extent					
1. ... was to test previously established relationships on a new sample of participants.....	0	1	2	3	4	NA
2. ... was to add a new variable or new combination of variables to the study of an established phenomenon	0	1	2	3	4	NA
3. ... was use an improved, more rigorous method than was previously used to study an established phenomenon (greater internal validity)	0	1	2	3	4	NA
4. ... was to adopt and use a method originally developed for use in another field of research....	0	1	2	3	4	NA
5. ... was to bring together ideas from two or more fields or subfields of study	0	1	2	3	4	NA
6. ... was to investigate a topic because it was controversial or in dispute.....	0	1	2	3	4	NA
7. ... was to test directly competing theories or models about a phenomenon	0	1	2	3	4	NA
8. ... reflected your personal interest and curiosity more than acceptability and interest to the discipline	0	1	2	3	4	NA

B. Epistemological Issues

Please use the same five-point scale to respond to the way the research process was conducted.

TO WHAT EXTENT . . .	Rating Scale					Great Extent
	No Extent					
8. ... was the research based on methods that were convenient for you to execute (familiarity, expense, facilities, etc.)	0	1	2	3	4	NA
9. ... was the research exploratory and open-ended (asking questions rather than testing hypotheses)	0	1	2	3	4	NA
10. ... were the variables of interest quantifiable (e.g., size easily quantifiable as counting number of patients; power is illusive and intangible) ...	0	1	2	3	4	NA
11. ... did you have firm expectations about the outcomes	0	1	2	3	4	NA
12. ... was statistical significance the indicator of valuable results	0	1	2	3	4	NA
13. ... would you have abandoned dissemination of this research if the findings were statistically significant, but in your opinion, these findings were of questionable value	0	1	2	3	4	NA
14. ... are the results applicable to nursing practice, education, or administration	0	1	2	3	4	NA
15. ... are results significant in some way other than that defined by research procedure	0	1	2	3	4	NA

C. Ethical Issues

Please take a few moments to reflect on ethical issues and concerns that may have arisen during the course of the research project. Please use the same five-point scale to respond to the following items.

TO WHAT EXTENT DID THE RESEARCH . . .	Rating Scale					Great Extent
	No Extent					
16. ... result in benefits for patients in spite of any discomfort and pain to research subjects...	0	1	2	3	4	NA
17. ... result in benefits for nursing in spite of ethical concerns	0	1	2	3	4	NA
18. ... potential for publications influence the conduct of the research	0	1	2	3	4	NA
19. ... pose problems in gaining informed consent from subjects	0	1	2	3	4	NA

D. Outcome (results) of the Research

TO WHAT EXTENT DID THE RESEARCH . . .	Rating Scale					Great Extent
	No Extent					
20. ... identify a relationship between variables that were previously believed not to be related...	0	1	2	3	4	NA
21. ... provide evidence that a previously accepted relationship actually has the opposite sign (now - instead of + or + instead of -).....	0	1	2	3	4	NA
22. ... provide evidence that a previously accepted causal relationship is actually in the opposite direction (x --> y, not y -->)	0	1	2	3	4	NA
23. ... determine that diverse phenomena are united by a single explanation.....	0	1	2	3	4	NA
24. ... provide evidence that a standard phenomenon (construct) is actually composed of several sub-parts.....	0	1	2	3	4	NA

D. Outcome (results) of the Research (continued)

TO WHAT EXTENT DID THE RESEARCH . . .	Rating Scale					
	No <u>Extent</u>				Great <u>Extent</u>	
25. ... develop a new explanation for an already accepted relationship between variables	0	1	2	3	4	NA
26. ... provide evidence that a phenomenon previously argued to be bad (inefficient, immoral, dysfunctional) is actually good (efficient, moral, functional) or visa versa	0	1	2	3	4	NA
27. ... develop a new theoretical construct or variable for use in the field	0	1	2	3	4	NA
28. ... help resolve a controversial or disputed issue in nursing	0	1	2	3	4	NA
29. ... clarify a poorly understood or cloudy issue ..	0	1	2	3	4	NA

E. Regarding the Successful Research Project . . .

31. Has it been published in a book or professional journal? ☐ Yes ☐ No
32. Has it been presented at a professional meeting? ☐ Yes ☐ No
33. Was it funded? ☐ Yes ☐ No
34. What was the predominant research approach used? (Check one)
- ☐ Quantitative
- ☐ Qualitative
- ☐ Both Quantitative and Qualitative

Comments: _____

Thank you for your cooperation.

Please return the completed questionnaire in the envelope provided.

CODE NUMBER _____

ON-SITE INTERVIEW WITH ESTABLISHED NURSE RESEARCHER

I. Introduction and Purpose

A. Introduction

- B. Purpose: To meet with ENR in order to explore factors related to successful research and scholarly endeavors, particularly individual and environmental factors.

II. Clarification of Responses on Pre-interview Instruments

A. General

Is there anything in particular that you would like to discuss from the earlier materials which you completed?

B. Family Background

On the pre-interview profile, you indicated
 parents educational level: Father _____
 Mother _____
 occupation : Father _____
 Mother _____

In addition, you indicated you had ____ siblings and that your ordinal position was _____.

Do you feel that these family factors had an influence on your career development?

No []

Yes []

Please describe:

C. Post-Doctoral Work

On the profile you indicated [] no post-doctoral work
 [] _____ months post-doc.
 [] other: _____

What influence does post doctoral work have on subsequent research and scholarly endeavors?

On a scale of 1 to 10, how valuable is the opportunity _____ for post-doctoral studies?

Please describe:

D. Career Influences

You reported career influences of:

Would you please elaborate further on these?

You reported research success influences of:

Please elaborate further.

E. Other: Opportunity for clarification of specific items

1. Pre-Interview Profile
2. Perceptions of Successful Research

III. Perceptions of Scholarly and Research Orientation

A. Perceived Importance of Research, Teaching, and Service

Consider the 3 general university missions
(instruction/teaching, research, and service).

How would you rank these activities (1-2-3) in terms of
expectations at your institution?

Instruction/Teaching	_____
Research	_____
Service	_____

B. Preference for Research, Teaching, and Service

Now, rank your own preference for these 3 activities.

Instruction/Teaching	_____
Research	_____
Service	_____

C. Congruence of Expectations

What importance do these two rankings have for the nurse
researcher?

IV. Perceptions of Individual Characteristics Related to Success as a Nurse Researcher

A. Characteristics

1. What are the most valuable attributes (antecedents) for research and scholarship?
2. What characteristics do you feel are most essential for a nurse researcher or scholar?

B. Perceived Expectations

What are your own personal expectations for scholarly productivity?

V. Perceptions of Environmental Characteristics which Promote Nursing Research and Other Forms of Scholarly Productivity

A. Environmental Characteristics

1. What environmental characteristics most effectively promote nursing research activities?
 - (a) Generally, in the profession
 - (b) In academia
 - (c) In service agencies
2. How would you describe the environment in which you work?

B. In Batey's (1978) study on the structure and process of productive research environments at university schools of nursing, she recommended elimination of use of the term "release time."

1. How do you feel about this recommendation?
2. Could the term "release time" affect faculty perceptions of investigative activities as inherent to the faculty role?
3. Lack of time is frequently cited as a barrier to research, yet, productive nursing researchers arrange their priorities to include scholarly activities. How do you make time for research as part of you faculty role?

C. Perceived Environmental Expectations

1. What do you perceive to be the expectations for scholarly productivity on the part of the:
 - (a) institution
 - (b) your academic colleagues
 - (c) the nursing profession
2. Consider your personal expectations for scholarly productivity and those of the institution.
 - (a) Commonalities?
 - (b) Differences?

D. Environmental Facilitators

1. What support services for research and scholarly endeavors in the environment should be considered:
 - (a) essential,
 - (b) desirable, not essential
 - (c) not necessary
2. What environmental provisions would you find
 - (a) most useful
 - (b) least useful

VI. Research Preferences

A. Areas of Study/Focus

1. What areas of research do you prefer?
 - ☐ Fundamental Processes (e.g., biology and behavior)
 - ☐ Nursing Practice (e.g., nursing process, intervention)
 - ☐ Nursing Profession (focus on practitioner/nursing society)
 - ☐ Delivery of Nursing Services (provision of services)
 - ☐ Nursing Education (process of education)

(Bloch, 1985, p. 133)
2. Have most of your research and publications been in this area?
3. What factors contributed to this preference?
4. Would you say that you have a "research program?"

☐ No
☐ Yes

If yes, please describe your research program.

- VII. Linkages and networks used in the generation, dissemination, and utilization of research (translation and transmission of the research process and techniques to students, colleagues, and consumers)

A. Communication with Colleagues

1. How frequently do you communicate with colleagues off-campus?

- ☐ Daily
- ☐ Several times per week
- ☐ Weekly
- ☐ Every few months
- ☐ When the opportunity arises at professional meetings
- ☐ When the need arises; no regular basis
- ☐ Other _____

2. What types of communications do you use most frequently?
(e.g., phone, correspondence, meetings; national, international)
3. Describe the usual nature of these communications.
(e.g., co-authorship of work, grant consultation, other)
4. How does your communication with colleagues influence the dissemination of your scholarly work?
5. On a scale of 1 to 10, how important are networking activities in research? _____

Please describe this importance.

B. Types of Activities

What types of linkages/networks are most valuable for the nurse researcher?

C. Mentor-Mentee Relationships

1. Have you had any mentors who have been particularly helpful in development of your research expertise?
☐ No
☐ Yes ----- How many? _____
 Was this a valuable experience for you? ☐ No
☐ Yes
 Please describe: _____
2. How many individuals have you served as a mentor for? _____
 Was this a valuable experience for you? ☐ No
☐ Yes
 Please describe: _____
3. In what ways did you perceive that your mentoring activities were valuable for the mentee's development as a researcher?
4. What are the hazards of mentorship?
 (a) to the mentor
 (b) to the mentee
 (c) to the investigation

VIII. Factors which promote research skills and scholarly productivity

A. Early Publications

Some of the literature indicates that early publication habits (prior to terminal degree) are related to later (career) publication rates.

[From profile: Career Total (all kinds) _____]
 [Past 3 years (all kinds) _____]

How many publications did you have before doctorate? _____
 How many within 3 years following the doctorate? _____

Has this influenced your scholarly productivity? ☐ No
☐ Yes
 In what ways? _____

B. Publication Habits

Consider your individual publication habits.

1. Do you have a preference for certain types of publications?

☐ No

☐ Yes ----

☐ books

☐ monographs

☐ refereed journals

☐ non-refereed journals

☐ other _____

2. Do you prefer to author an article/book alone or to collaborate?

☐ Single authorship

☐ Co-authorship

☐ Multiple authorship

3. What percentage of your publications are:

_____ % Single authored

_____ % Co-authored

_____ % Multiple authored

4. What is the most important factor in determining a preference for a publication or other dissemination source for scholarly productivity?

Describe: _____

5. Do you have any personal goal for publications

Per year? ☐ No ☐ Yes

By type? ☐ No ☐ Yes

Relative to interest? ☐ No ☐ Yes

Describe:

C. Research Habits

How would you describe your research habits?

D. Support for Research

For each of the following groups, please describe kinds of support you perceive with your research activities.

1. The University, institution in general.
2. College/School/Dept. of Nursing (Administration).
3. Campus colleagues, other than nurses.
4. Nursing colleagues, on campus.
5. Nursing colleagues, off-campus.

IX. Techniques to further develop research output and expertise

A. Further Development

What methods or activities do you use to further develop research expertise for successful research outcomes?

B. Recommendations

What would be your primary recommendation for development of research skills by:

1. Colleagues in academia
2. Practitioners in service agencies
3. Students

X. Additional Comments and Closure

CODE NUMBER ____

ORGANIZATIONAL ENVIRONMENT

General Information: Please provide information in response to the following items concerning the organizational factors at your institution. The questions have been designed to complement information provided by the established nurse researchers selected for study at your institution. A section for additional comments as been provided to include any further information which you feel is pertinent.

PART A: GENERAL INSTITUTIONAL DATA

GEOGRAPHIC LOCATION (NLN regional classification): Please check accuracy.

- | | |
|---|-----------------------------------|
| <input type="checkbox"/> North Atlantic | <input type="checkbox"/> Southern |
| <input type="checkbox"/> Midwest | <input type="checkbox"/> Western |

INSTITUTIONAL TYPE (Carnegie Classification): Please check for accuracy.

- | |
|---|
| <input type="checkbox"/> Research University I |
| <input type="checkbox"/> Research University II |
| <input type="checkbox"/> Doctoral-Granting University I |
| <input type="checkbox"/> Doctoral-Granting University II |
| <input type="checkbox"/> Comprehensive University |
| <input type="checkbox"/> Specialized Institution (e.g., health center separate from
main campus) |

INSTITUTIONAL SPONSORSHIP: Please check for accuracy.

- | | |
|----------------------------------|---------------------------------|
| <input type="checkbox"/> Private | <input type="checkbox"/> Public |
|----------------------------------|---------------------------------|

PRIMARY INSTITUTIONAL MISSION: Please indicate the primary institutional mission as stated at your institution.

- | |
|---|
| <input type="checkbox"/> Teaching/instruction |
| <input type="checkbox"/> Research |
| <input type="checkbox"/> Service |
| <input type="checkbox"/> Other _____ |

ORGANIZATION OF NURSING EDUCATION DIVISION

- | |
|--|
| <input type="checkbox"/> College of Nursing |
| <input type="checkbox"/> Department of Nursing |
| <input type="checkbox"/> Division of Nursing |
| <input type="checkbox"/> School of Nursing |
| <input type="checkbox"/> Other _____ |

NURSING DEGREE PROGRAMS OFFERED: Please indicate all that apply.

- ☐ Baccalaureate Date founded: _____
- ☐ Master's Degree Degree(s) awarded: ☐ M.N. ☐ M.S. ☐ M.S.N. Date founded: _____
- ☐ Doctorate Degree(s) awarded: ☐ Ph.D. ☐ D.N.S., D.N.Sci. ☐ Other Date founded: _____
- ☐ Other _____

PROGRAM SIZES:

<u>Faculty</u> (head count)	<u>Students</u> (F.T.E.)
_____	_____ Baccalaureate program
_____	_____ Master's degree program
_____	_____ Doctoral degree program
_____	_____ Other: _____

STUDENT-FACULTY RATIO: Please indicate the current overall ratios, by program.

_____ :1	Baccalaureate program
_____ :1	Master's degree program
_____ :1	Doctoral degree program

RESEARCH REQUIREMENT: Please indicate research expectancies for faculty.
(Check all that apply)

- ☐ Appointment
- ☐ Promotion
- ☐ Retention, contract continuation
- ☐ Tenure
- ☐ Other: _____

SUPPORT SERVICES: Please indicate which support services are available for faculty use in research (non-instructional) activities.
(Check all that apply)

- ☐ Computer services
 - ☐ Microcomputers available for research
 - ☐ Faculty accounts for research
 - ☐ Student accounts for research
 - ☐ Consultation (design)
 - ☐ Consultation (statistical services)
 - ☐ Continuing education (workshops)
 - ☐ Financial support
 - ☐ Library support (computer searches, inter-library loan policy)
 - ☐ Physical/office space
 - ☐ Release time from meetings
 - ☐ Release time from instructional activities, describe: _____
-
- ☐ Research assistants
 - ☐ Research coordinator
 - ☐ Sabbatical leaves
 - ☐ Secretarial services
 - ☐ Supplies
 - ☐ Other: _____
-

SPONSORED RESEARCH: Please indicate aggregate amounts of sponsored research dollars received by faculty during Fiscal Year 1985-86.

\$ _____ .xx Intramural funds \$ _____ .xx Extramural funds

BIOMEDICAL RESEARCH SUPPORT: Has your school or college been awarded eligibility for Biomedical Research Support Grant funds in the past five years?

- ☐ Yes. If so, how much has been awarded during this period?

\$ _____ .xx (Years: _____)

- ☐ No

RESEARCH SUPPORT UNIT: Does your institution have a Center or Office for Nursing Research?

- ☐ Yes. If yes, please identify the structure below and complete Part B with information pertaining to your unit.

- ☐ Office of Nursing Research
- ☐ Center for Nursing Research
- ☐ Other: _____

- ☐ No. Please proceed to PART C.

PART B: RESEARCH SUPPORT UNIT (RSU) STRUCTURE

FOUNDING: Please indicate the year the RSU was established. 19 __ __

EMPLOYEES: How many employees are part of the RSU?

____ Faculty
____ Support Staff

SPECIAL SERVICES: Please describe any special services of the RSU.

PART C: ADDITIONAL COMMENTS

Thank you for your cooperation.

This instrument will be collected by the researcher
at the end of the day or may be returned in the envelope provided.

*** Rose Kearney *** 3614-B SW 29th Terrace *** Gainesville, Florida 32608 ***

CODE NUMBER _ _ _ _

REACTION TO AGGREGATE REPORT

INSTRUCTIONS: Please review the enclosed report and assess whether you have been fairly represented in the report. You may make any notations on the report, complete the following short answer questions, and/or any other method you feel appropriate. Additional pages may be attached, as needed. A return envelope has been provided for your use. Thank you for your time and expertise.

1. As an Established Nurse Researcher, do you feel that you and your perceptions of individual and environmental characteristics have been accurately presented?

☐ NO.

☐ YES.

Please Describe:

2. What changes would you like to see made in the report? Please be specific.

3. What additional information would you wish to add?

4. Would you like to have a minority report included?

[] NO.

[] YES. (If so, please indicate below or attach separate page.)

ADDITIONAL COMMENTS: Please include any additional comments.

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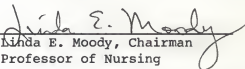
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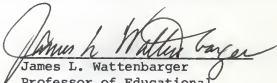
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